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: P438275

Luminaire Tested: **IST-SA1B-830-U-SL2**

Issue Date: 12/10/2020

Report Generated By 670245982

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: | P438275 |
| | TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-2011-074-14) |
| Test Lab: | INNOVATION CENTER |
| Issue Date: | 12/10/2020 |
| Manufacturer: | COOPER LIGHTING SOLUTIONS (FORMERLY EATON) |
| Product Line: | McGRAW-EDISON |
| Catalog Number: | IST-SA1B-830-U-SL2 |
| Description: | IMPACT ELITE LED TRAPEZOID LUMINAIRE |
| | (1) 80 CRI, 3000K, 450mA LIGHTSQUARE WITH 16 LEDS AND TYPE II SPILL LIGHT ELIMINATOR OPTICS |
| Light Source: | - |
| Ballast/Driver: | ELECTRONIC DRIVER |

**Summary**

| | |
|---|---|
| Lumens per Lamp: | N/A |
| Luminaire Lumens: | 2720 lumens |
| Efficiency: | N/A |
| Efficacy: | 107.1 lumens/watt |
| Luminous Opening: | Rectangular (W 0.5' x L: 0.5' x H: 0') |
| IES Classification: | Type III - Medium |
| BUG Rating: | B1 - U0 - G1 |

| | |
|---|---|
| Input Watts (W): | 25.4 |
| Input Voltage (V): | NR |
| Input Current (Ain): | NR |
| Voltage Rise (V): | NR |
| Power Factor: | NR |
| Total Harmonic Distortion (THDi): | NR |
| Frequency (hertz): | 60 |
| Stabilization Time: | NR |
| Operation Time: | NR |
| Ambient Temperature (°C): | NR |
| Test Distance: | 28.75 FT |

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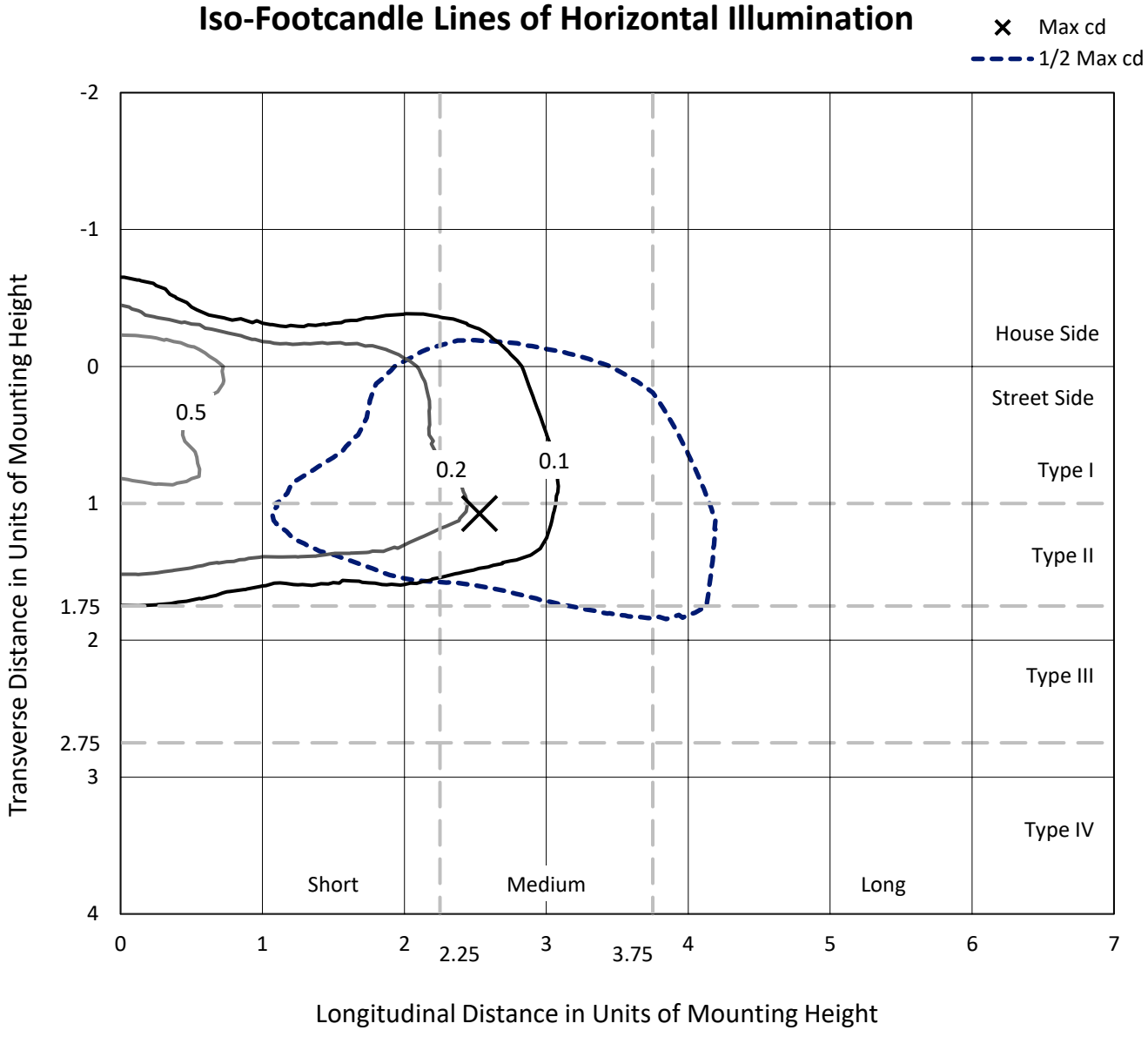
Scaled Data Report

REPORT NUMBER: P438275
CATALOG NUMBER: IST-SA1B-830-U-SL2

## Iso-Footcandle Lines of Horizontal Illumination




Based on 25 foot mounting height. Maximum calculated value = 1 fc
Type III - Medium - N/A

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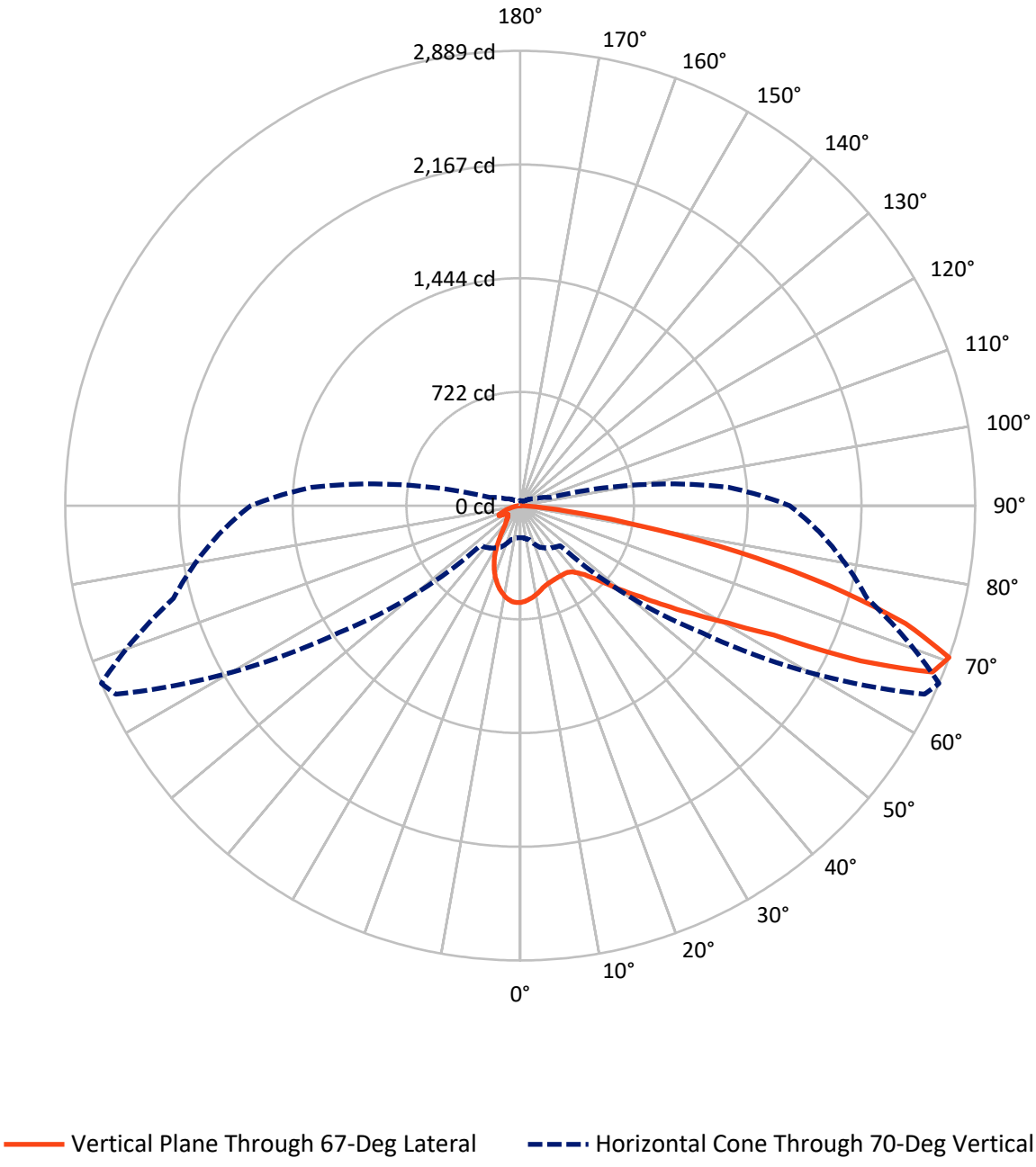
## Luminous Intensity Polar Plot



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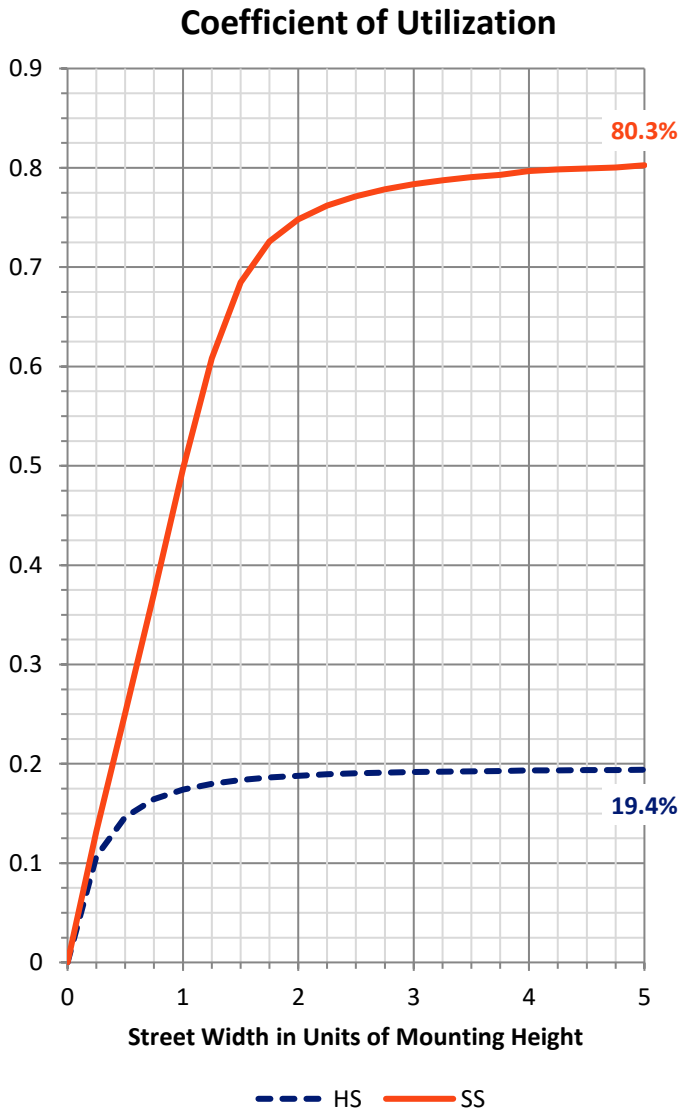
CATALOG NUMBER: IST-SA1B-830-U-SL2

**FLUX DISTRIBUTION:**

| | | Downward | Upward | Total |
|---|---|---|---|---|
| **House Side** | Lumens | 532.7 | 0.0 | 532.7 |
| | % Fixture | 19.6 | 0.0 | 19.6 |
| **Street Side** | Lumens | 2187.3 | 0.0 | 2187.3 |
| | % Fixture | 80.4 | 0.0 | 80.4 |
| **Total** | Lumens | 2720.0 | 0.0 | 2720.0 |
| | % Fixture | 100.0 | 0.0 | 100.0 |

**ZONAL LUMENS:**

| Zone | Lumens | % Fixture |
|---|---|---|
| 0°-10° | 53.9 | 2.0 |
| 10°-20° | 130.5 | 4.8 |
| 20°-30° | 179.9 | 6.6 |
| 30°-40° | 243.0 | 8.9 |
| 40°-50° | 360.6 | 13.3 |
| 50°-60° | 555.0 | 20.4 |
| 60°-70° | 686.2 | 25.2 |
| 70°-80° | 459.7 | 16.9 |
| 80°-90° | 51.2 | 1.9 |
| 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° | 2720.0 | 100.0 |
| 0°-180° | 2720.0 | 100.0 |



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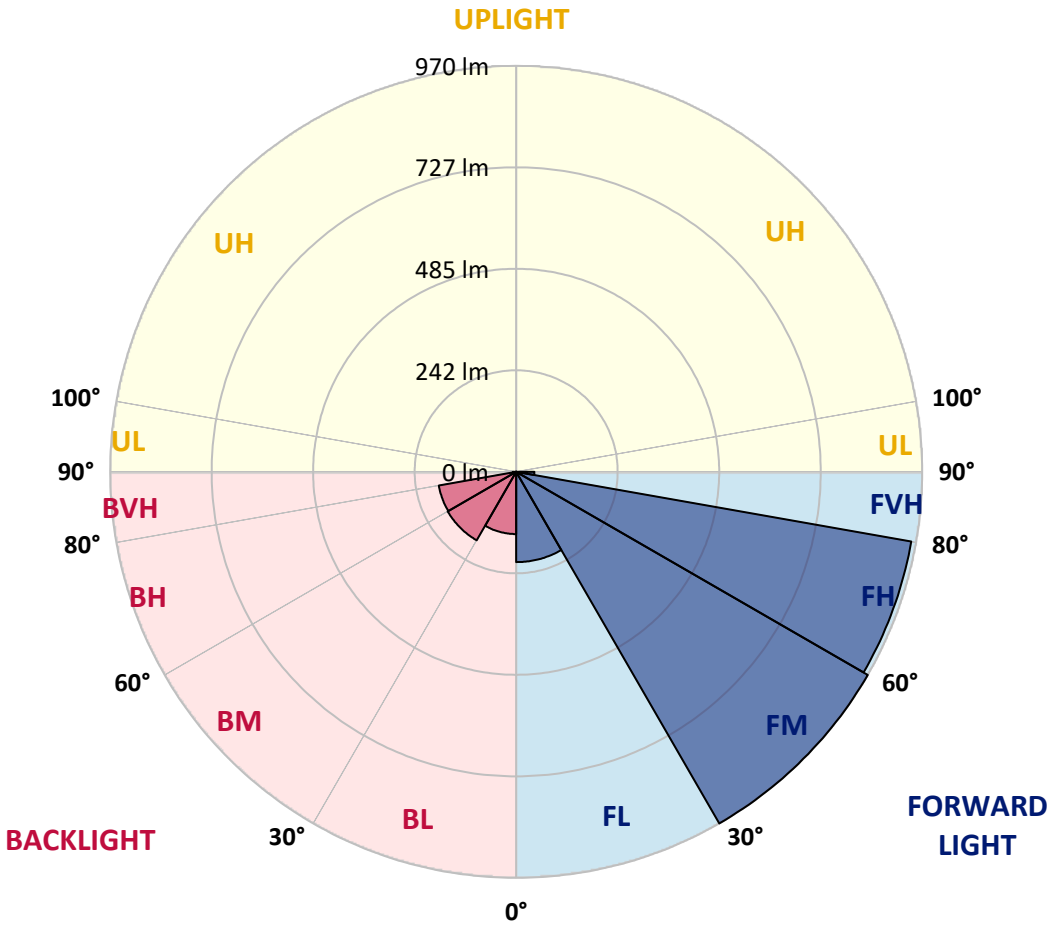
Scaled Data Report

REPORT NUMBER: P438275
CATALOG NUMBER: IST-SA1B-830-U-SL2

## LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

| Zone | | Lumens | % Fixture | Zone Rating/Lumen Limit B | U | G |
|---|---|---|---|---|---|---|
| FL | (0°-30°) | 215.7 | 7.9 | | | |
| FM | (30°-60°) | 969.7 | 35.7 | | | |
| FH | (60°-80°) | 958.2 | 35.2 | | | G1/1800 |
| FVH | (80°-90°) | 43.6 | 1.6 | | | G1/100 |
| BL | (0°-30°) | 148.6 | 5.5 | B1/500 | | |
| BM | (30°-60°) | 188.9 | 6.9 | B0/220 | | |
| BH | (60°-80°) | 187.6 | 6.9 | B1/500 | | G1/500 |
| BVH | (80°-90°) | 7.6 | 0.3 | | | G0/10 |
| UL | (90°-100°) | 0.0 | 0.0 | | U0/0 | |
| UH | (100°-180°) | 0.0 | 0.0 | | U0/0 | |

**BUG Rating: B1-U0-G1**
Type III Medium



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REPORT NUMBER: P438275
CATALOG NUMBER: IST-SA1B-830-U-SL2

**CANDELA DISTRIBUTION (FULL):**

| | 0° | 5° | 15° | 25° | 35° | 45° | 55° | 65° | 67° | 75° | 85° |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0° | 614.2 | 614.2 | 614.2 | 614.2 | 614.2 | 614.2 | 614.2 | 614.2 | 614.2 | 614.2 | 614.2 |
| 2.5° | 580.7 | 584.7 | 585.7 | 588.6 | 592.5 | 596.5 | 601.4 | 607.3 | 608.3 | 611.2 | 617.2 |
| 5° | 541.4 | 543.3 | 545.3 | 551.2 | 558.1 | 570.9 | 583.7 | 595.5 | 597.5 | 607.3 | 618.1 |
| 7.5° | 504.9 | 509.9 | 510.8 | 515.8 | 526.6 | 542.3 | 560.1 | 580.7 | 586.6 | 600.4 | 617.2 |
| 10° | 478.4 | 481.3 | 483.3 | 492.1 | 501.0 | 518.7 | 540.4 | 566.0 | 571.9 | 592.5 | 616.2 |
| 12.5° | 456.7 | 461.6 | 464.6 | 470.5 | 484.3 | 500.0 | 521.7 | 549.2 | 557.1 | 582.7 | 612.2 |
| 15° | 444.9 | 448.8 | 449.8 | 456.7 | 467.5 | 483.3 | 504.0 | 535.5 | 541.4 | 572.9 | 612.2 |
| 17.5° | 441.9 | 442.9 | 443.9 | 447.9 | 456.7 | 469.5 | 491.2 | 523.6 | 530.5 | 568.9 | 612.2 |
| 20° | 447.9 | 447.9 | 447.9 | 445.9 | 452.8 | 462.6 | 484.3 | 513.8 | 523.6 | 565.0 | 615.2 |
| 22.5° | 461.6 | 462.6 | 459.7 | 454.7 | 451.8 | 458.7 | 477.4 | 510.8 | 519.7 | 564.0 | 621.1 |
| 25° | 481.3 | 482.3 | 480.3 | 473.4 | 459.7 | 458.7 | 474.4 | 507.9 | 515.8 | 563.0 | 620.1 |
| 27.5° | 507.9 | 513.8 | 507.9 | 500.0 | 482.3 | 466.6 | 477.4 | 505.9 | 514.8 | 563.0 | 622.1 |
| 30° | 545.3 | 549.2 | 546.3 | 533.5 | 510.8 | 483.3 | 481.3 | 507.9 | 514.8 | 562.0 | 621.1 |
| 32.5° | 582.7 | 583.7 | 586.6 | 577.8 | 550.2 | 507.9 | 492.1 | 509.9 | 515.8 | 561.0 | 618.1 |
| 35° | 611.2 | 617.2 | 629.9 | 630.9 | 598.4 | 543.3 | 514.8 | 517.7 | 519.7 | 564.0 | 615.2 |
| 37.5° | 647.7 | 649.6 | 670.3 | 686.1 | 657.5 | 592.5 | 546.3 | 532.5 | 533.5 | 573.8 | 620.1 |
| 40° | 681.1 | 689.0 | 717.5 | 737.2 | 727.4 | 658.5 | 589.6 | 559.1 | 561.0 | 591.6 | 631.9 |
| 42.5° | 731.3 | 737.2 | 766.8 | 794.3 | 797.3 | 733.3 | 649.6 | 604.4 | 599.4 | 626.0 | 657.5 |
| 45° | 775.6 | 782.5 | 819.9 | 860.3 | 874.1 | 817.9 | 724.4 | 666.4 | 658.5 | 684.1 | 704.8 |
| 47.5° | 837.6 | 849.4 | 879.0 | 925.2 | 971.5 | 921.3 | 819.9 | 751.0 | 744.1 | 761.8 | 767.7 |
| 50° | 896.7 | 903.6 | 928.2 | 984.3 | 1066.0 | 1051.2 | 937.0 | 861.3 | 850.4 | 853.4 | 867.2 |
| 52.5° | 905.5 | 908.5 | 934.1 | 993.2 | 1146.7 | 1209.7 | 1080.8 | 985.3 | 965.6 | 968.5 | 985.3 |
| 55° | 838.6 | 850.4 | 869.1 | 951.8 | 1152.6 | 1385.9 | 1282.5 | 1148.7 | 1118.2 | 1107.3 | 1121.1 |
| 57.5° | 699.8 | 713.6 | 740.2 | 825.8 | 1084.7 | 1481.4 | 1613.3 | 1343.6 | 1296.3 | 1246.1 | 1262.8 |
| 60° | 515.8 | 530.5 | 547.3 | 630.9 | 912.4 | 1496.1 | 1942.0 | 1579.8 | 1509.9 | 1384.9 | 1393.8 |
| 62.5° | 395.7 | 395.7 | 410.4 | 444.9 | 610.3 | 1388.8 | 2134.9 | 1979.4 | 1808.1 | 1554.2 | 1543.4 |
| 65° | 319.9 | 323.8 | 338.6 | 371.1 | 385.8 | 986.3 | 2211.7 | 2560.1 | 2378.0 | 1757.0 | 1700.9 |
| 67.5° | 264.8 | 265.8 | 282.5 | 333.7 | 337.6 | 542.3 | 2006.0 | 2865.3 | 2822.0 | 2010.9 | 1868.2 |
| 70° | 202.8 | 203.7 | 223.4 | 290.4 | 328.8 | 359.3 | 1403.6 | 2833.8 | 2888.9 | 2280.6 | 1904.6 |
| 72.5° | 134.8 | 140.8 | 164.4 | 230.3 | 327.8 | 338.6 | 761.8 | 2478.4 | 2558.2 | 2385.9 | 1782.6 |
| 75° | 83.7 | 84.6 | 109.3 | 159.5 | 301.2 | 337.6 | 447.9 | 1931.2 | 2029.6 | 1979.4 | 1546.3 |
| 77.5° | 51.2 | 53.2 | 65.0 | 104.3 | 233.3 | 338.6 | 318.9 | 1328.8 | 1410.5 | 1299.3 | 911.5 |
| 80° | 31.5 | 31.5 | 37.4 | 63.0 | 151.6 | 303.2 | 274.6 | 772.7 | 764.8 | 480.3 | 258.9 |
| 82.5° | 11.8 | 12.8 | 19.7 | 34.5 | 76.8 | 235.2 | 241.2 | 349.4 | 321.9 | 141.7 | 92.5 |
| 85° | 2.0 | 2.0 | 3.9 | 10.8 | 20.7 | 97.4 | 133.9 | 123.0 | 103.4 | 43.3 | 38.4 |
| 87.5° | 0.0 | 0.0 | 0.0 | 1.0 | 1.0 | 2.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.9 |
| 90° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

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Scaled Data Report

REPORT NUMBER: P438275
CATALOG NUMBER: IST-SA1B-830-U-SL2

**CANDELA DISTRIBUTION (continued):**

| | 90° | 95° | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0° | 614.2 | 614.2 | 614.2 | 614.2 | 614.2 | 614.2 | 614.2 | 614.2 | 614.2 | 614.2 | 614.2 |
| 2.5° | 617.2 | 619.1 | 618.1 | 615.2 | 612.2 | 610.3 | 605.3 | 602.4 | 603.4 | 603.4 | 604.4 |
| 5° | 619.1 | 622.1 | 617.2 | 611.2 | 600.4 | 588.6 | 577.8 | 571.9 | 564.0 | 567.0 | 565.0 |
| 7.5° | 622.1 | 624.0 | 615.2 | 597.5 | 578.8 | 559.1 | 540.4 | 523.6 | 510.8 | 504.9 | 508.9 |
| 10° | 620.1 | 623.1 | 606.3 | 579.7 | 551.2 | 519.7 | 491.2 | 463.6 | 445.9 | 434.1 | 437.0 |
| 12.5° | 619.1 | 616.2 | 593.5 | 554.2 | 514.8 | 471.5 | 428.2 | 394.7 | 365.2 | 353.4 | 355.3 |
| 15° | 615.2 | 613.2 | 577.8 | 527.6 | 473.4 | 412.4 | 355.3 | 312.0 | 276.6 | 264.8 | 268.7 |
| 17.5° | 617.2 | 611.2 | 559.1 | 495.1 | 421.3 | 346.5 | 276.6 | 234.3 | 216.5 | 212.6 | 211.6 |
| 20° | 615.2 | 604.4 | 540.4 | 459.7 | 366.2 | 268.7 | 205.7 | 183.1 | 183.1 | 189.0 | 190.0 |
| 22.5° | 617.2 | 598.4 | 519.7 | 419.3 | 303.2 | 201.8 | 160.4 | 154.5 | 163.4 | 176.2 | 176.2 |
| 25° | 617.2 | 591.6 | 497.1 | 374.0 | 237.2 | 153.5 | 136.8 | 136.8 | 148.6 | 160.4 | 159.5 |
| 27.5° | 613.2 | 577.8 | 471.5 | 325.8 | 176.2 | 127.0 | 120.1 | 123.0 | 130.9 | 140.8 | 139.8 |
| 30° | 603.4 | 564.0 | 440.0 | 269.7 | 133.9 | 112.2 | 111.2 | 112.2 | 116.1 | 122.1 | 121.1 |
| 32.5° | 594.5 | 548.3 | 409.5 | 209.7 | 113.2 | 104.3 | 103.4 | 104.3 | 105.3 | 107.3 | 107.3 |
| 35° | 588.6 | 534.5 | 373.0 | 161.4 | 102.4 | 99.4 | 97.4 | 97.4 | 95.5 | 96.5 | 96.5 |
| 37.5° | 581.7 | 521.7 | 335.6 | 126.0 | 96.5 | 94.5 | 92.5 | 89.6 | 89.6 | 87.6 | 87.6 |
| 40° | 581.7 | 511.8 | 297.3 | 106.3 | 92.5 | 91.5 | 87.6 | 83.7 | 81.7 | 81.7 | 81.7 |
| 42.5° | 597.5 | 511.8 | 261.8 | 97.4 | 88.6 | 87.6 | 82.7 | 78.7 | 76.8 | 76.8 | 76.8 |
| 45° | 624.0 | 517.7 | 225.4 | 91.5 | 85.6 | 83.7 | 77.8 | 73.8 | 71.9 | 71.9 | 70.9 |
| 47.5° | 670.3 | 542.3 | 192.9 | 88.6 | 82.7 | 79.7 | 72.8 | 68.9 | 66.9 | 66.9 | 66.9 |
| 50° | 748.1 | 591.6 | 166.3 | 85.6 | 79.7 | 74.8 | 68.9 | 65.0 | 63.0 | 63.0 | 62.0 |
| 52.5° | 855.3 | 665.4 | 153.5 | 83.7 | 75.8 | 69.9 | 65.0 | 61.0 | 59.1 | 58.1 | 58.1 |
| 55° | 984.3 | 776.6 | 151.6 | 82.7 | 71.9 | 65.9 | 61.0 | 57.1 | 55.1 | 54.1 | 54.1 |
| 57.5° | 1125.0 | 898.7 | 165.4 | 80.7 | 67.9 | 61.0 | 57.1 | 53.2 | 51.2 | 50.2 | 50.2 |
| 60° | 1260.9 | 1032.5 | 209.7 | 78.7 | 65.0 | 57.1 | 52.2 | 49.2 | 47.2 | 46.3 | 46.3 |
| 62.5° | 1418.4 | 1173.3 | 307.1 | 79.7 | 63.0 | 53.2 | 48.2 | 45.3 | 44.3 | 43.3 | 43.3 |
| 65° | 1591.6 | 1334.7 | 392.7 | 87.6 | 64.0 | 49.2 | 44.3 | 42.3 | 40.4 | 39.4 | 39.4 |
| 67.5° | 1745.1 | 1439.0 | 327.8 | 101.4 | 69.9 | 46.3 | 39.4 | 38.4 | 36.4 | 35.4 | 36.4 |
| 70° | *1710.7* | *1328.8* | *201.8* | *102.4* | *70.9* | *44.3* | *35.4* | *33.5* | *31.5* | *31.5* | *31.5* |
| 72.5° | 1560.1 | 1172.3 | 140.8 | 88.6 | 63.0 | 39.4 | 30.5 | 28.5 | 27.6 | 27.6 | 27.6 |
| 75° | 1313.0 | 966.6 | 112.2 | 71.9 | 49.2 | 32.5 | 25.6 | 24.6 | 23.6 | 22.6 | 22.6 |
| 77.5° | 718.5 | 525.6 | 83.7 | 55.1 | 36.4 | 24.6 | 21.7 | 19.7 | 18.7 | 18.7 | 18.7 |
| 80° | 210.6 | 180.1 | 52.2 | 39.4 | 23.6 | 17.7 | 16.7 | 14.8 | 13.8 | 13.8 | 13.8 |
| 82.5° | 88.6 | 74.8 | 31.5 | 21.7 | 15.7 | 11.8 | 10.8 | 9.8 | 8.9 | 7.9 | 8.9 |
| 85° | 34.5 | 36.4 | 19.7 | 12.8 | 8.9 | 5.9 | 4.9 | 3.9 | 3.9 | 3.0 | 3.9 |
| 87.5° | 3.9 | 4.9 | 3.9 | 3.0 | 2.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| 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-79-2019: 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

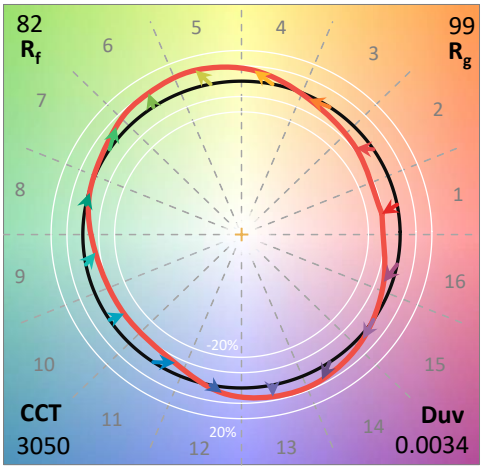
## Test Information

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

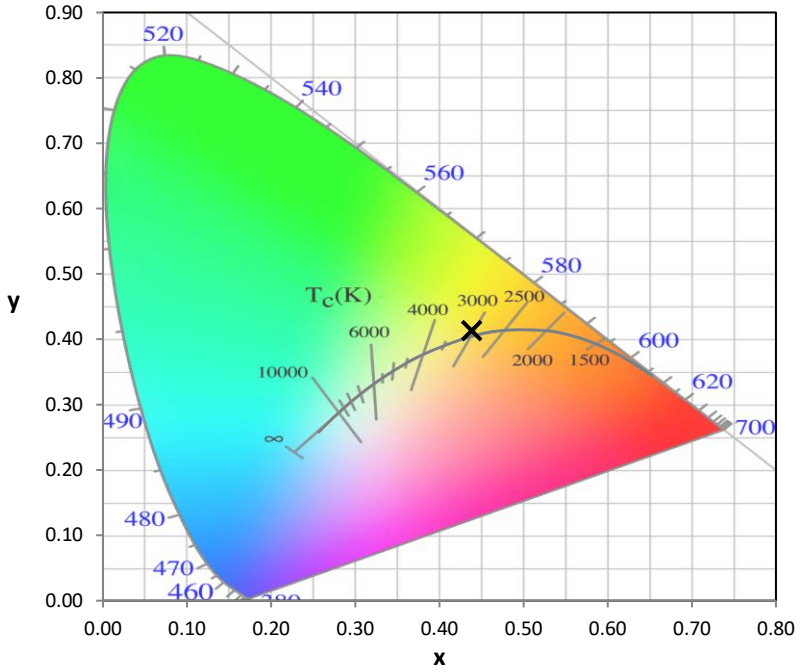
| | |
|---|---|
| Stabilization Time: | 20M |
| Operation Time: | 1H 20M |
| Sphere Temperature (°C): | 24.2 |

REPORT NUMBER: SP1-2408-195-9

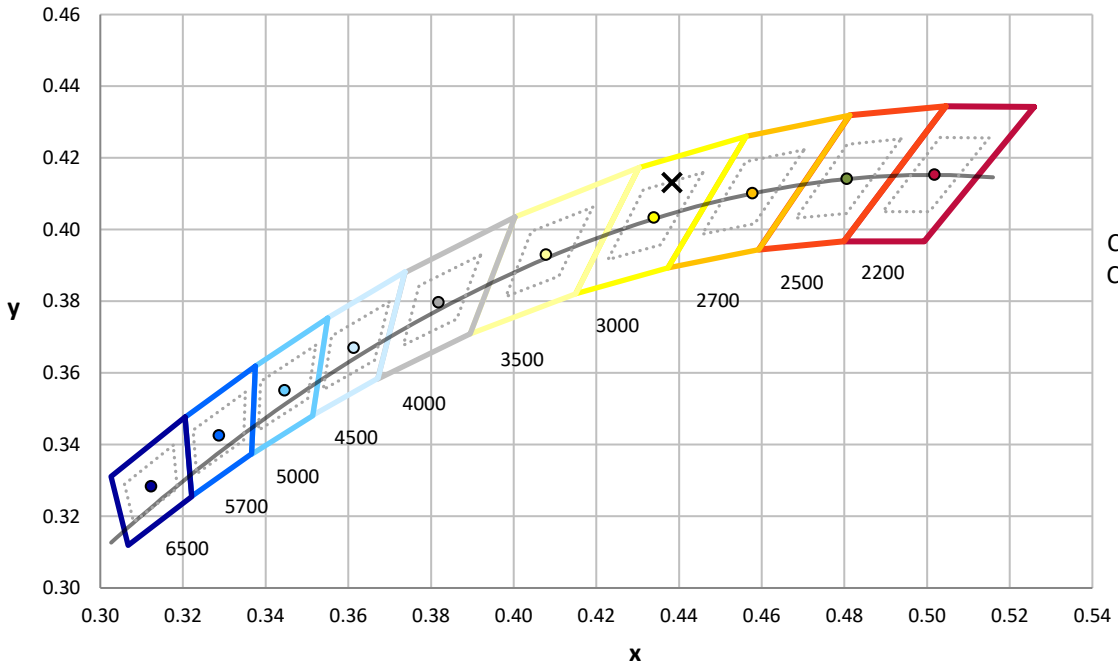
| Measurement and Test Equipment | | | |
|---|---|---|---|
| Instrument | Identification Number | Calibration Date | Calibration Due Date |
| Photometer | IN0058 | 6/18/2024 | 12/18/2024 |
| Power Meter | INXT2011004 | 2/8/2024 | 2/8/2025 |
| AC Power Source | IN0063 | 10/24/2023 | 10/24/2024 |
| DC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

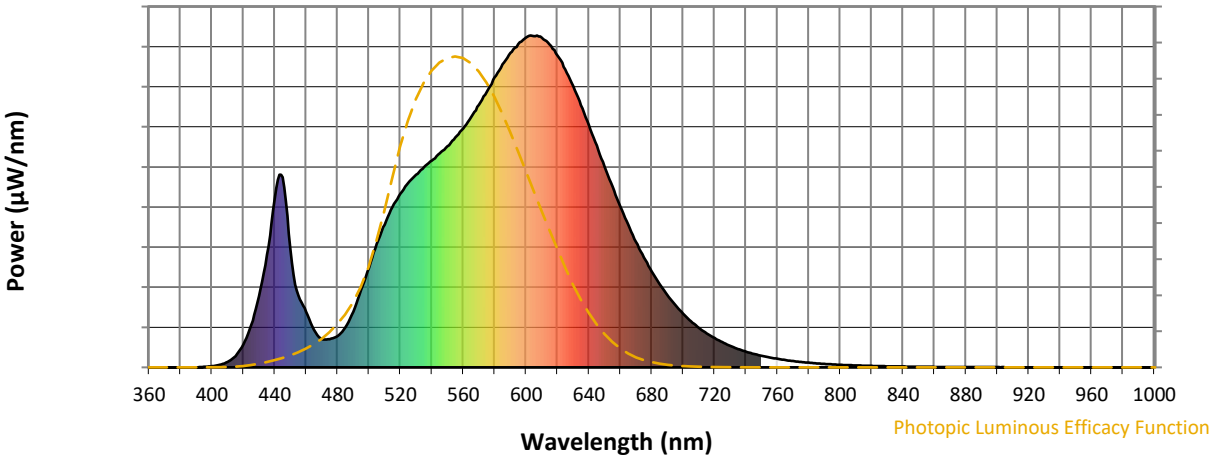



CCT = 3050K
CIE x = 0.4383
CIE y = 0.4131
Duv = 0.0034

Point lies inside the ANSI 3000K 4-step quadrangle

REPORT NUMBER: SP1-2408-195-9

## Photopic Flux vs. Wavelength

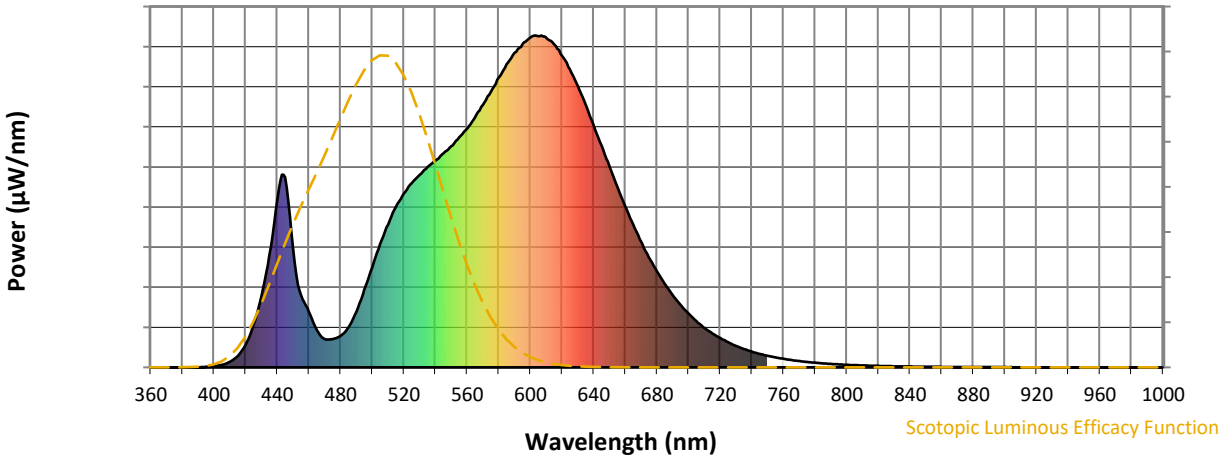



## Photopic Lumens: NR

| 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

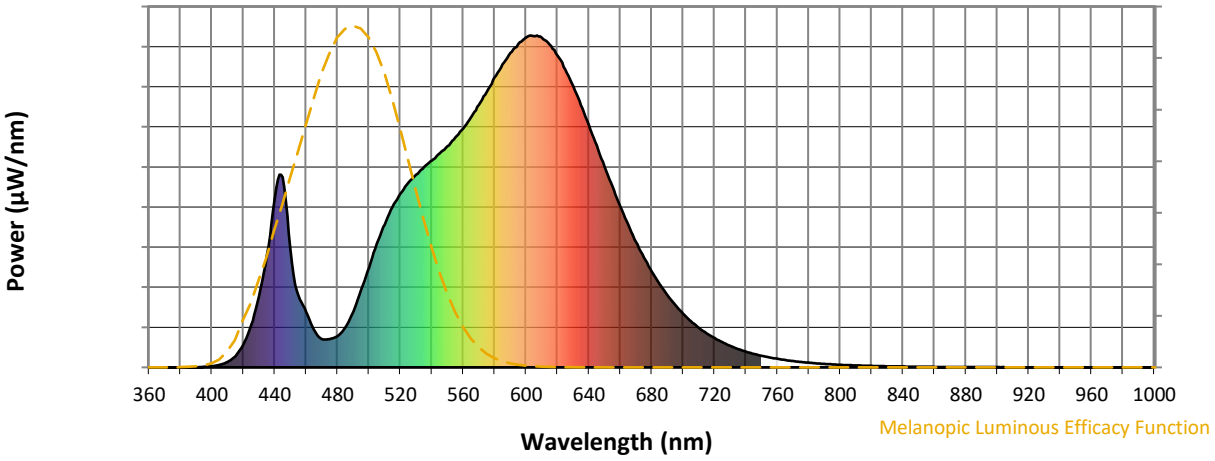



**Scotopic Lumens: NR** **S/P: 1.27**

| 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 | | | |

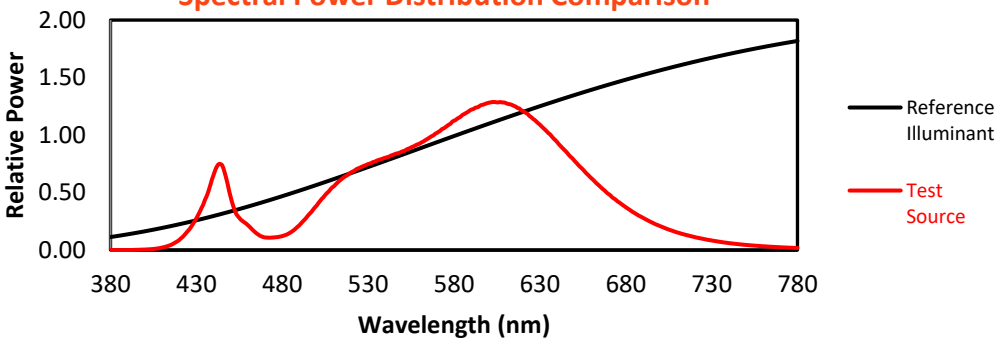
REPORT NUMBER: SP1-2408-195-9

# TM-30-18

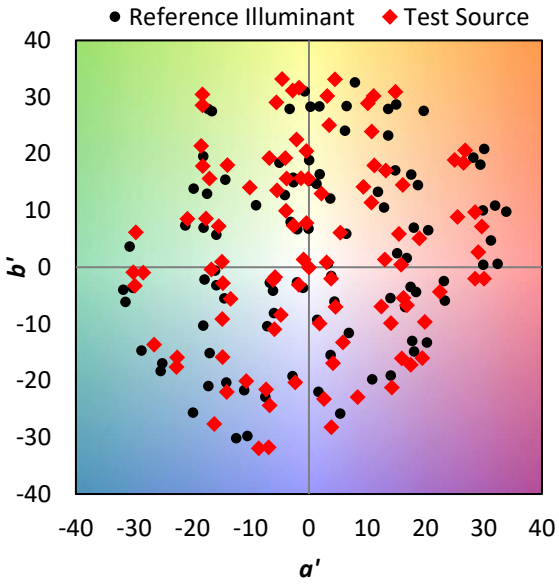
## Summary

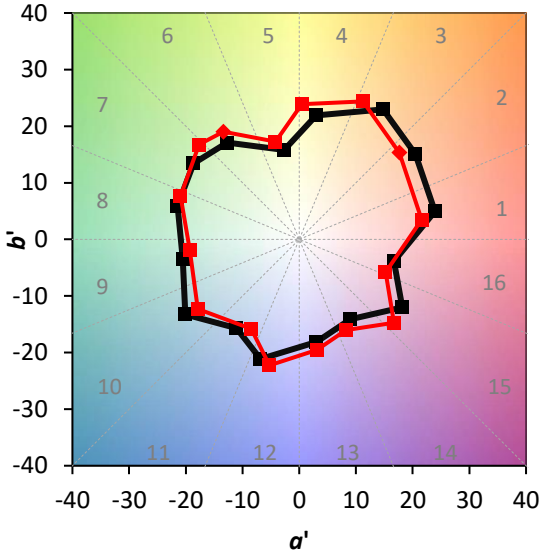
$R_f$ = 81.5
$R_g$ = 99.2
CIE $R_a$ = 81.0
$R_9$ = 7.1

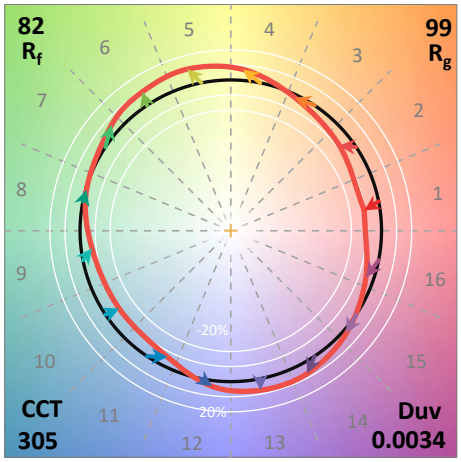
## Spectral Power Distribution Comparison

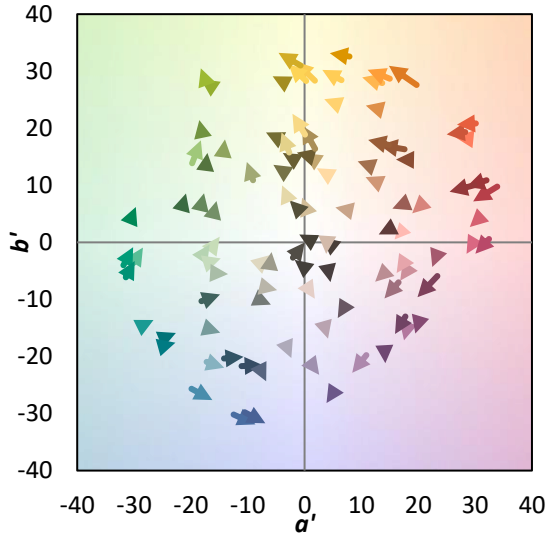



## Color Vector Graphics



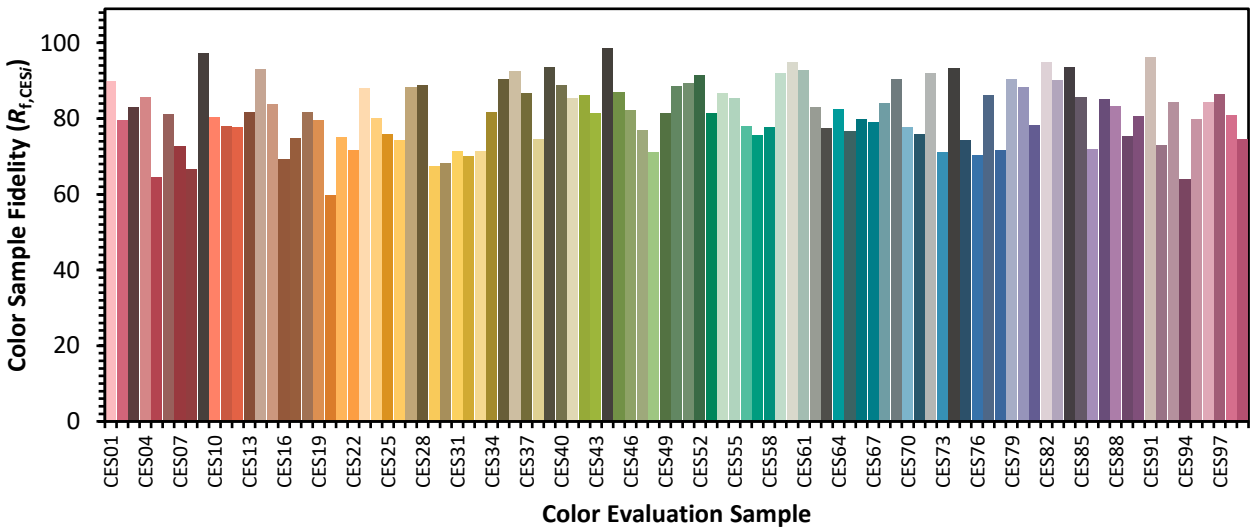



REPORT NUMBER: SP1-2408-195-9

# TM-30-18

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

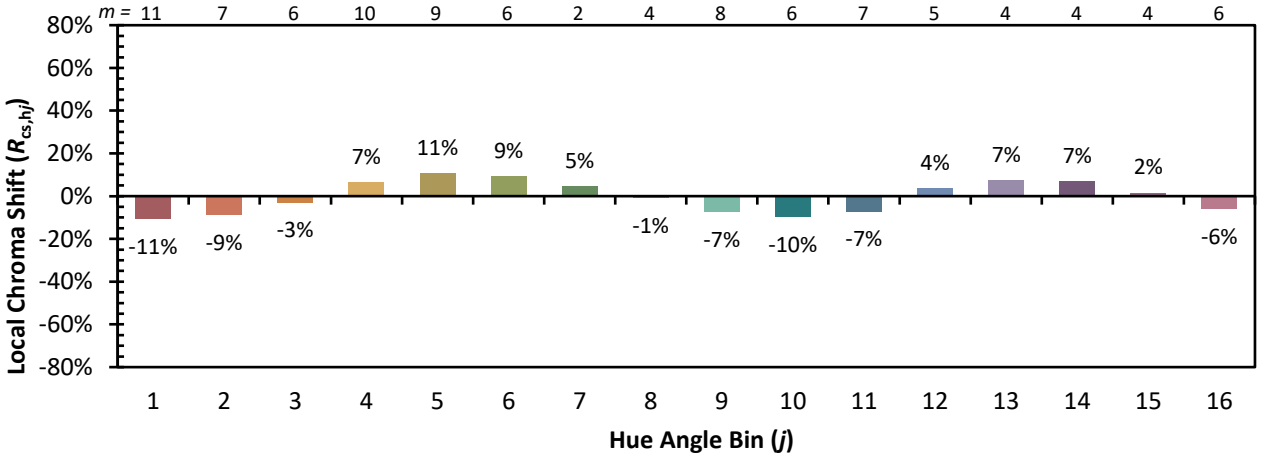
| | | | |
|---|---|---|---|
| CES01 = 86 | CES26 = 74 | CES51 = 89 | CES76 = 70 |
| CES02 = 63 | CES27 = 88 | CES52 = 92 | CES77 = 86 |
| CES03 = 31 | CES28 = 89 | CES53 = 81 | CES78 = 72 |
| CES04 = 70 | CES29 = 67 | CES54 = 87 | CES79 = 90 |
| CES05 = 50 | CES30 = 68 | CES55 = 85 | CES80 = 88 |
| CES06 = 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 | |

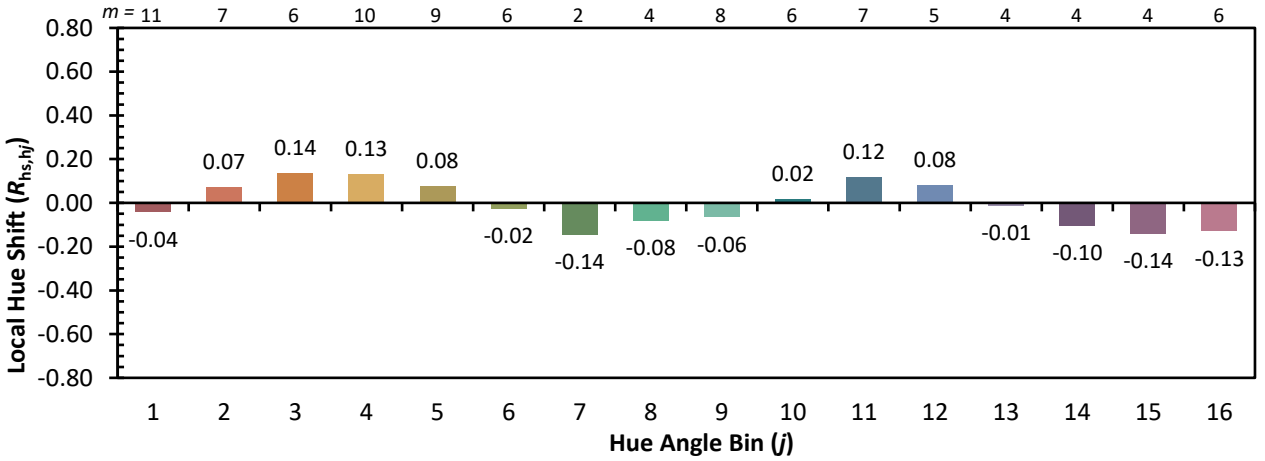


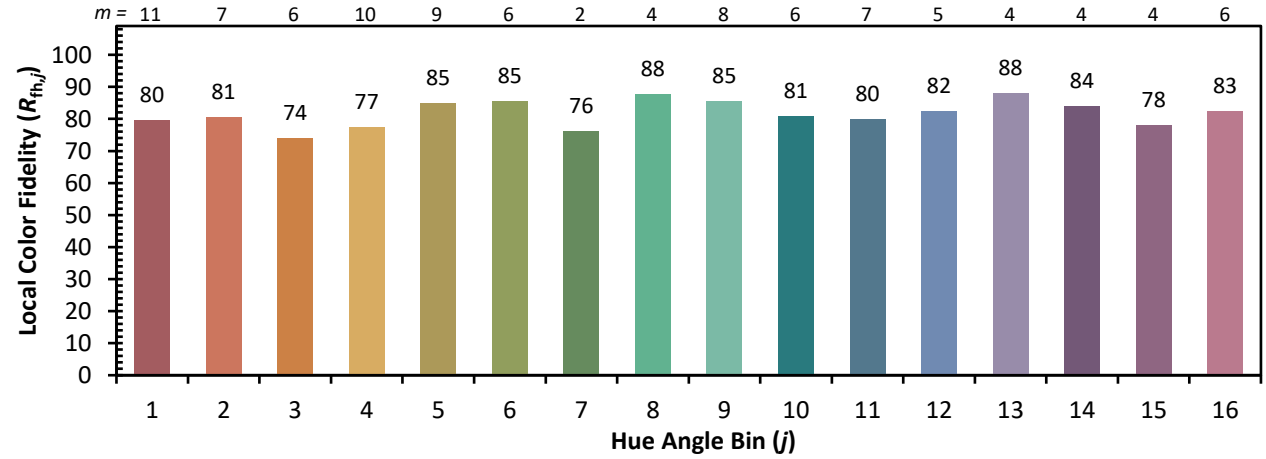
REPORT NUMBER: SP1-2408-195-9

# TM-30-18

## Color Rendition by Hue-Angle Bin



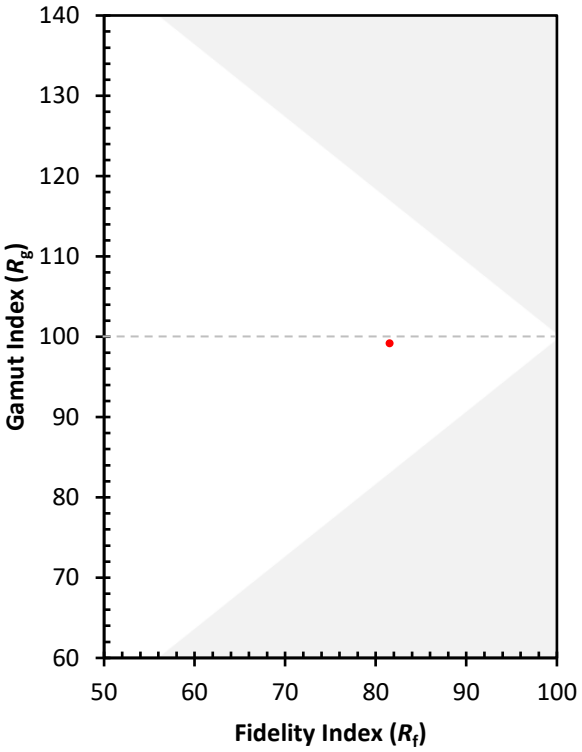



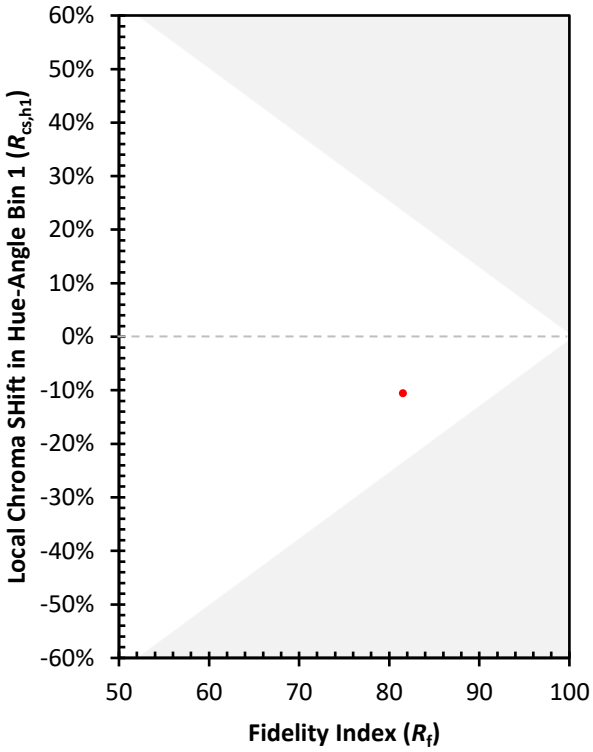



REPORT NUMBER: SP1-2408-195-9

# TM-30-18

## Measure Comparisons

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