Signify Classified - Internal

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: METALUX

Report Number: P1590674

Luminaire Tested: 24CGTX-35-B45-HCD

Issue Date: 9/4/2026

Report Generated By 670265710 / DESKTOP-98SHLC4

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

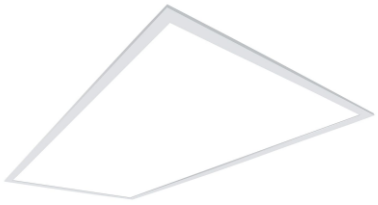
Scaled Data Report

**Test Information**

| | |
|---|---|
| Test Method: | LM-79-2019 |
| Report Number: | P1590674 |
| | TEST IS SCALED FROM IESNA LM-79-24 TEST DATA (G3-2510-581-28) |
| Test Lab: | COOPER LIGHTING SOLUTIONS |
| Issue Date: | 9/4/2026 |
| Manufacturer: | COOPER LIGHTING SOLUTIONS |
| Product Line: | METALUX |
| | |
| Catalog Number: | 24CGTX-35-B45-HCD |
| Description: | 2X4 3500 LUMEN CGTX TROFFER WITH BIO UP LEDS AT 4500K CCT WITH FROSTED SMOOTH LENS |
| Light Source: | 4500K CCT, 80 CRI LEDS |
| Ballast/Driver: | - |

**Summary**

| | |
|---|---|
| Lumens per Lamp: | N/A |
| Luminaire Lumens: | 3424.8 lumens |
| Efficiency: | N/A |
| Efficacy: | 115.3 lumens/watt |
| Spacing Criteria (0/90/45): | 1.27 / 1.27 / 1.39 |
| Luminous Opening: | Rectangular (W 2' x L: 4' x H: 0') |
| CIE Type: | Direct |
| | |
| Input Watts (W): | 29.7 |
| Input Voltage (V): | 120 |
| 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: | 24 FT |

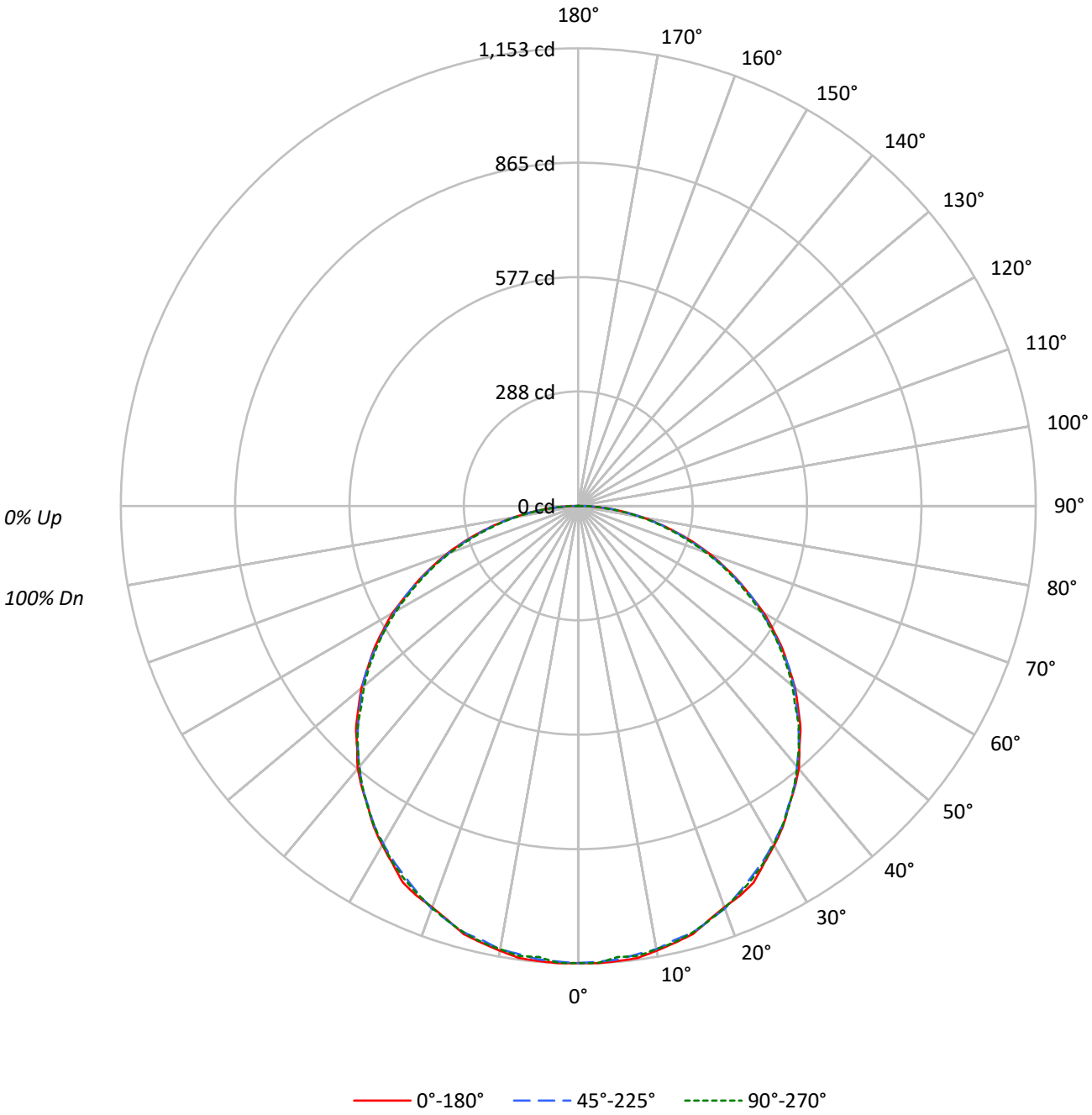


Cooper Lighting Solutions Photometric Lab
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Peachtree City, GA 30269

Scaled Data Report

TEST NUMBER: P1590674
CATALOG NUMBER: 24CGTX-35-B45-HCD

## Luminous Intensity Polar Plot



Cooper Lighting Solutions Photometric Lab
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Peachtree City, GA 30269

Scaled Data Report

TEST NUMBER: P1590674
CATALOG NUMBER: 24CGTX-35-B45-HCD

## COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:

| RF | 20 | | | | 20 | | | | 20 | | | 20 | | | 20 | | | 20 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| RC | 80 | | | | 70 | | | | 50 | | | 30 | | | 10 | | | 0 |
| RW | 70 | 50 | 30 | 10 | 70 | 50 | 30 | 10 | 50 | 30 | 10 | 50 | 30 | 10 | 50 | 30 | 10 | 0 |
| RCR | | | | | | | | | | | | | | | | | | |
| 0 | 119 | 119 | 119 | 119 | 116 | 116 | 116 | 116 | 111 | 111 | 111 | 106 | 106 | 106 | 102 | 102 | 102 | 100 |
| 1 | 108 | 103 | 99 | 95 | 106 | 101 | 97 | 93 | 97 | 93 | 90 | 93 | 90 | 88 | 89 | 87 | 85 | 83 |
| 2 | 98 | 90 | 83 | 77 | 96 | 88 | 81 | 76 | 84 | 79 | 74 | 81 | 76 | 72 | 78 | 74 | 71 | 68 |
| 3 | 89 | 79 | 70 | 63 | 87 | 77 | 69 | 63 | 74 | 67 | 62 | 71 | 65 | 61 | 69 | 64 | 60 | 57 |
| 4 | 82 | 69 | 60 | 54 | 79 | 68 | 60 | 53 | 66 | 58 | 52 | 63 | 57 | 52 | 61 | 55 | 51 | 49 |
| 5 | 75 | 62 | 53 | 46 | 73 | 61 | 52 | 46 | 59 | 51 | 45 | 57 | 50 | 45 | 55 | 49 | 44 | 42 |
| 6 | 69 | 56 | 47 | 40 | 67 | 55 | 46 | 40 | 53 | 45 | 39 | 51 | 44 | 39 | 50 | 43 | 39 | 37 |
| 7 | 64 | 50 | 41 | 35 | 62 | 50 | 41 | 35 | 48 | 40 | 35 | 47 | 40 | 35 | 45 | 39 | 34 | 32 |
| 8 | 60 | 46 | 37 | 31 | 58 | 45 | 37 | 31 | 44 | 36 | 31 | 43 | 36 | 31 | 41 | 35 | 31 | 29 |
| 9 | 56 | 42 | 34 | 28 | 54 | 42 | 34 | 28 | 40 | 33 | 28 | 39 | 33 | 28 | 38 | 32 | 28 | 26 |
| 10 | 52 | 39 | 31 | 26 | 51 | 38 | 31 | 25 | 37 | 30 | 25 | 36 | 30 | 25 | 35 | 29 | 25 | 23 |

## AVERAGE LUMINANCE (cd/sqm):

| | 0° | 45° | 90° |
|---|---|---|---|
| 0° | 1550 | 1550 | 1550 |
| 5° | 1555 | 1549 | 1541 |
| 10° | 1555 | 1550 | 1550 |
| 15° | 1556 | 1550 | 1550 |
| 20° | 1541 | 1546 | 1543 |
| 25° | 1554 | 1532 | 1540 |
| 30° | 1534 | 1526 | 1530 |
| 35° | 1518 | 1516 | 1520 |
| 40° | 1519 | 1506 | 1509 |
| 45° | 1507 | 1494 | 1496 |
| 50° | 1492 | 1487 | 1473 |
| 55° | 1474 | 1460 | 1453 |
| 60° | 1454 | 1436 | 1426 |
| 65° | 1413 | 1403 | 1385 |
| 70° | 1384 | 1362 | 1344 |
| 75° | 1327 | 1304 | 1275 |
| 80° | 1258 | 1234 | 1210 |
| 85° | 1152 | 1133 | 1084 |

## MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°
Vertical Angle: 45°
Luminance: 1507 cd/sqm

Cooper Lighting Solutions Photometric Lab
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Peachtree City, GA 30269

Scaled Data Report

TEST NUMBER: P1590674
CATALOG NUMBER: 24CGTX-35-B45-HCD

**ZONAL LUMENS:**

| Zone | Lumens | % Fixture |
|---|---|---|
| 0°-10° | 109.1 | 3.2 |
| 10°-20° | 313.5 | 9.2 |
| 20°-30° | 477.0 | 13.9 |
| 30°-40° | 579.2 | 16.9 |
| 40°-50° | 607.1 | 17.7 |
| 50°-60° | 556.5 | 16.2 |
| 60°-70° | 435.3 | 12.7 |
| 70°-80° | 264.9 | 7.7 |
| 80°-90° | 82.2 | 2.4 |
| 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°-30° | 899.6 | 26.3 |
| 0°-40° | 1478.8 | 43.2 |
| 0°-60° | 2642.4 | 77.2 |
| 0°-90° | 3424.8 | 100.0 |
| 90°-120° | 0.0 | 0.0 |
| 90°-150° | 0.0 | 0.0 |
| 90°-180° | 0.0 | 0.0 |
| 0°-180° | 3424.8 | 100.0 |

**CANDELA DISTRIBUTION:**

| | 0° | 22.5° | 45° | 67.5° | 90° | Flux |
|---|---|---|---|---|---|---|
| 0° | 1152 | 1152 | 1152 | 1152 | 1152 | |
| 5° | 1151 | 1149 | 1147 | 1147 | 1141 | 110 |
| 15° | 1117 | 1108 | 1113 | 1110 | 1113 | 314 |
| 25° | 1046 | 1033 | 1032 | 1033 | 1037 | 480 |
| 35° | 924 | 929 | 923 | 925 | 926 | 580 |
| 45° | 792 | 786 | 785 | 786 | 786 | 610 |
| 55° | 628 | 622 | 623 | 618 | 620 | 561 |
| 65° | 444 | 443 | 441 | 437 | 435 | 439 |
| 75° | 255 | 253 | 251 | 248 | 245 | 270 |
| 85° | 75 | 75 | 73 | 70 | 70 | 83 |
| 90° | 0 | 0 | 0 | 0 | 0 | |

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Peachtree City, GA 30269

Scaled Data Report

TEST NUMBER: P1590674
CATALOG NUMBER: 24CGTX-35-B45-HCD

**CANDELA DISTRIBUTION (FULL):**

| | 0° | 22.5° | 45° | 67.5° | 90° |
|---|---|---|---|---|---|
| 0° | *1151.8* | 1151.8 | 1151.8 | 1151.8 | 1151.8 |
| 2.5° | *1153.1* | *1149.9* | *1149.3* | *1144.9* | *1152.4* |
| 5° | *1151.2* | 1149.3 | 1146.8 | 1146.8 | 1141.1 |
| 7.5° | *1148.7* | 1143.6 | 1139.3 | 1140.5 | 1143.6 |
| 10° | *1138.0* | 1133.6 | 1134.2 | 1128.0 | 1134.2 |
| 12.5° | *1127.3* | 1124.2 | 1120.4 | 1123.6 | 1125.5 |
| 15° | *1116.7* | 1107.9 | 1112.9 | 1109.8 | 1112.9 |
| 17.5° | *1094.1* | 1096.0 | 1095.4 | 1091.6 | 1095.4 |
| 20° | *1075.9* | 1080.9 | 1079.7 | 1075.9 | 1077.8 |
| 22.5° | *1063.4* | 1056.5 | 1055.9 | 1056.5 | 1058.4 |
| 25° | *1046.5* | 1033.3 | 1032.0 | 1032.7 | 1037.1 |
| 27.5° | *1014.5* | 1010.7 | 1008.8 | 1008.2 | 1012.6 |
| 30° | *987.5* | 982.5 | 982.5 | 981.9 | 985.0 |
| 32.5° | *959.3* | 956.8 | 956.2 | 956.8 | 956.8 |
| 35° | *924.2* | 929.2 | 922.9 | 924.8 | 925.5 |
| 37.5° | *895.4* | 897.2 | 894.1 | 891.6 | 892.8 |
| 40° | *864.6* | 860.2 | 857.7 | 857.7 | 859.0 |
| 42.5° | *825.1* | 828.9 | 822.6 | 826.4 | 822.6 |
| 45° | *791.9* | 786.3 | 785.0 | 785.6 | 786.3 |
| 47.5° | *751.1* | 748.0 | 746.1 | 750.5 | 740.5 |
| 50° | *712.9* | 709.8 | 710.4 | 707.9 | 703.5 |
| 52.5° | *667.8* | 665.9 | 669.6 | 665.2 | 662.7 |
| 55° | *628.3* | 622.0 | 622.6 | 618.2 | 619.5 |
| 57.5° | *583.1* | 581.2 | 576.8 | 576.8 | 575.6 |
| 60° | *540.5* | 533.6 | 533.6 | 531.1 | 529.8 |
| 62.5° | *488.4* | 487.8 | 490.9 | 485.9 | 481.5 |
| 65° | *443.9* | 443.3 | 440.8 | 437.0 | 435.1 |
| 67.5° | *396.9* | 393.8 | 392.5 | 388.1 | 390.6 |
| 70° | *351.7* | 347.4 | 346.1 | 341.1 | 341.7 |
| 72.5° | *303.5* | 299.7 | 298.5 | 292.8 | 292.2 |
| 75° | *255.2* | 253.3 | 250.8 | 248.3 | 245.2 |
| 77.5° | *206.9* | 206.3 | 206.9 | 200.0 | 200.6 |
| 80° | *162.4* | 161.8 | 159.3 | 155.5 | 156.1 |
| 82.5° | *116.6* | 116.6 | 115.4 | 113.5 | 111.6 |
| 85° | *74.6* | 74.6 | 73.4 | 70.2 | 70.2 |
| 87.5° | *33.9* | 34.5 | 35.7 | 35.7 | 35.1 |
| 90° | *0.0* | 0.0 | 0.0 | 0.0 | 0.0 |

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Peachtree City, GA 30269

TEST NUMBER: P1590674
CATALOG NUMBER: 24CGTX-35-B45-HCD

**CIE UGR TABLE:**

| Reflectances: | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Ceiling | 0.7 | 0.7 | 0.5 | 0.5 | 0.3 | 0.7 | 0.7 | 0.5 | 0.5 | 0.3 |
| | Wall | 0.5 | 0.3 | 0.5 | 0.3 | 0.3 | 0.5 | 0.3 | 0.5 | 0.3 | 0.3 |
| | Reference plane | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 |
| Room dimensions | | Viewed crosswise | | | | | Viewed endwise | | | | |
| X=2H | Y=2H | 13.54 | 15.20 | 13.90 | 15.52 | 15.83 | 13.48 | 15.14 | 13.84 | 15.46 | 15.77 |
| | 3H | 15.48 | 16.98 | 15.85 | 17.31 | 17.67 | 15.39 | 16.89 | 15.76 | 17.22 | 17.58 |
| | 4H | 16.24 | 17.67 | 16.64 | 18.01 | 18.39 | 16.12 | 17.55 | 16.52 | 17.89 | 18.27 |
| | 6H | 16.84 | 18.16 | 17.25 | 18.53 | 18.92 | 16.70 | 18.03 | 17.11 | 18.39 | 18.78 |
| | 8H | 17.05 | 18.32 | 17.48 | 18.70 | 19.10 | 16.90 | 18.17 | 17.33 | 18.56 | 18.95 |
| | 12H | 17.20 | 18.42 | 17.63 | 18.80 | 19.23 | 17.05 | 18.26 | 17.47 | 18.64 | 19.07 |
| 4H | 2H | 14.20 | 15.63 | 14.60 | 15.98 | 16.35 | 14.16 | 15.58 | 14.56 | 15.93 | 16.30 |
| | 3H | 16.37 | 17.57 | 16.78 | 17.96 | 18.36 | 16.29 | 17.49 | 16.70 | 17.88 | 18.28 |
| | 4H | 17.27 | 18.36 | 17.70 | 18.77 | 19.21 | 17.17 | 18.25 | 17.60 | 18.66 | 19.10 |
| | 6H | 18.01 | 18.97 | 18.47 | 19.41 | 19.86 | 17.88 | 18.83 | 18.33 | 19.27 | 19.73 |
| | 8H | 18.28 | 19.17 | 18.74 | 19.62 | 20.08 | 18.14 | 19.03 | 18.60 | 19.47 | 19.93 |
| | 12H | 18.49 | 19.29 | 18.97 | 19.77 | 20.23 | 18.33 | 19.13 | 18.81 | 19.61 | 20.08 |
| 8H | 4H | 17.63 | 18.52 | 18.08 | 18.96 | 19.42 | 17.53 | 18.43 | 17.99 | 18.87 | 19.33 |
| | 6H | 18.51 | 19.25 | 19.00 | 19.74 | 20.21 | 18.39 | 19.13 | 18.88 | 19.62 | 20.09 |
| | 8H | 18.86 | 19.53 | 19.37 | 20.04 | 20.52 | 18.73 | 19.40 | 19.23 | 19.90 | 20.38 |
| | 12H | 19.16 | 19.75 | 19.66 | 20.24 | 20.80 | 19.00 | 19.60 | 19.51 | 20.09 | 20.64 |
| 12H | 4H | 17.67 | 18.48 | 18.15 | 18.95 | 19.42 | 17.58 | 18.39 | 18.06 | 18.86 | 19.33 |
| | 6H | 18.58 | 19.25 | 19.09 | 19.76 | 20.24 | 18.47 | 19.14 | 18.97 | 19.64 | 20.13 |
| | 8H | 19.00 | 19.59 | 19.51 | 20.08 | 20.64 | 18.87 | 19.47 | 19.38 | 19.95 | 20.51 |

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

Metalux

Report Number: SP1-2510-581-4-R2

Test Date: 01/21/2026

Luminaire Tested: 24CGTX-55-B45-HCD

Data in this report applies to families of products including 24CGTX-55HE

Report Generated By FNC07603 / LDUCLS01DT446
Version: v7.05

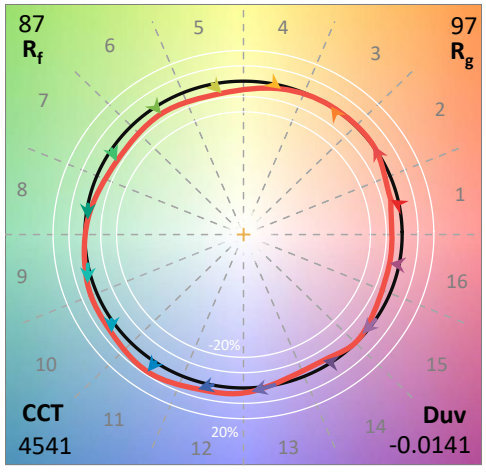
## Test Information

| | |
|---|---|
| Test Method: | LM-79-2019 |
| Report Number: | SP1-2510-581-4-R2 |
| Test Lab: | COOPER LIGHTING SOLUTIONS |
| Photometer: | SP1 - 76IN SPHERE |
| Measurement Geometry: | 4π |
| Issue Date: | 07/28/2026 |
| Manufacturer: | COOPER LIGHTING SOLUTIONS |
| Product Line: | Metalux |
| Catalog Number: | **24CGTX-55-B45-HCD** |
| Description: | *THIS IS A REVISION OF REPORT SP1-2510-581-4-R2 TO UPDATE THE CATALOG INFORMATION* 2X4 CGTX 5500 lumen with BioUp Boards with fixed CCT 4500K - Control Volatge at 3V |

## Spectral Parameters

| | |
|---|---|
| CCT (K): | 4541 |
| CIE u': | 0.2259 |
| CIE v': | 0.4759 |
| Duv: | -0.0141 |
| CIE x: | 0.3541 |
| CIE y: | 0.3316 |
| CIE z: | 0.3143 |
| Peak Wavelength (nm): | 630 |
| Dominant Wavelength (nm): | 622 |
| Purity: | 5.72732 |
| Rf: | 87.2 |
| Rg: | 96.7 |

| | |
|---|---|
| CRI (Ra): | 86.3 |
| R1: | 91.4 |
| R2: | 86.5 |
| R3: | 84.4 |
| R4: | 88.4 |
| R5: | 89.6 |
| R6: | 80.7 |
| R7: | 83.3 |
| R8: | 86.2 |
| R9: | 86.2 |
| R10: | 74.5 |
| R11: | 89.9 |
| R12: | 69.8 |
| R13: | 89.5 |
| R14: | 92.9 |
| R15: | 92.2 |




## Test Conditions

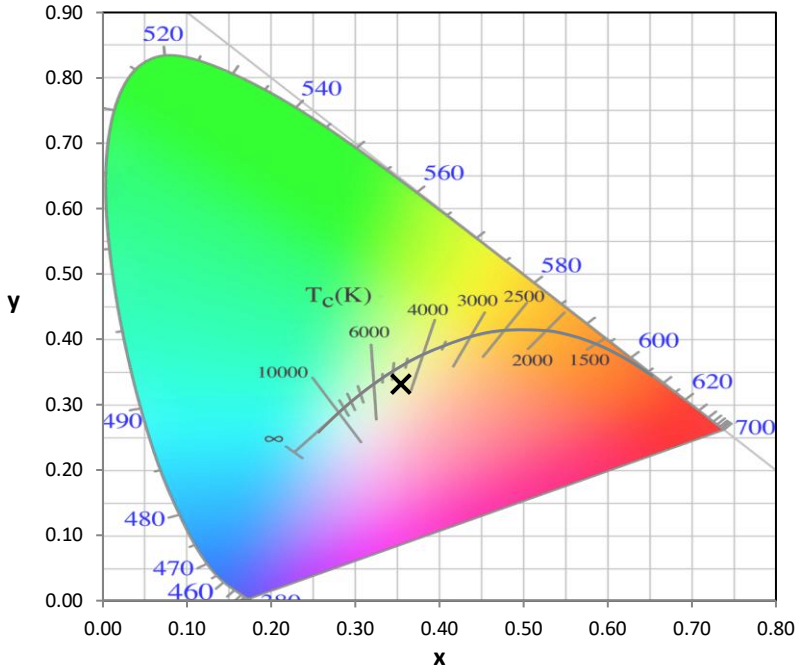
| | |
|---|---|
| Stabilization Time: | 20M |
| Operation Time: | 1H 20M |
| Sphere Temperature (°C): | 25.1 |

REPORT NUMBER: SP1-2510-581-4-R2

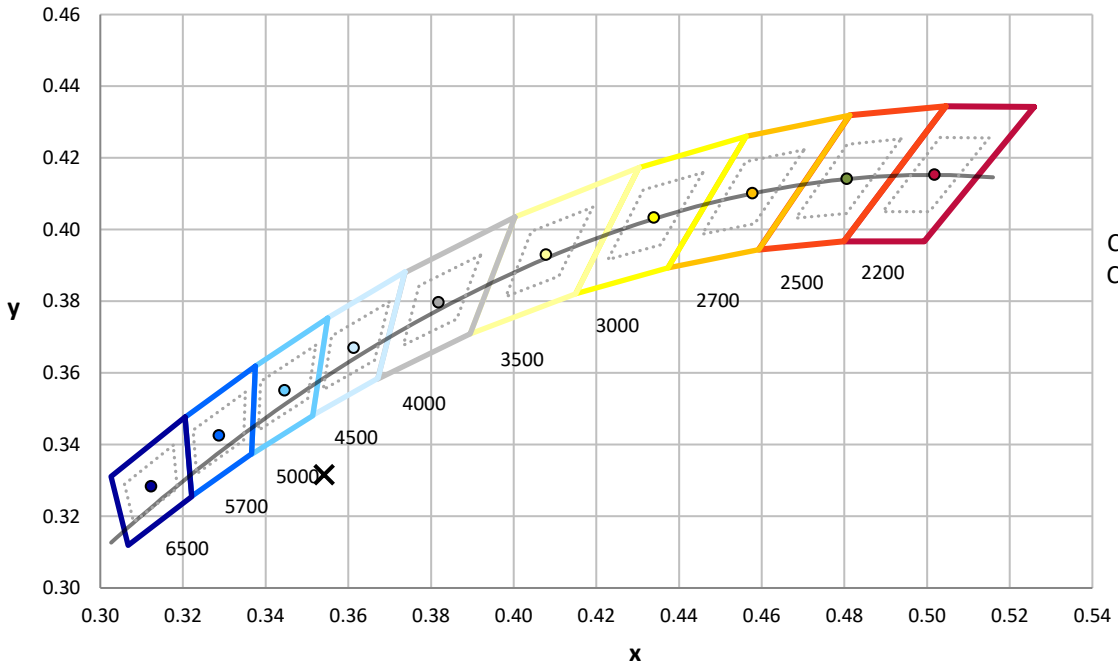
| Measurement and Test Equipment | | | |
|---|---|---|---|
| Instrument | Identification Number | Calibration Date | Calibration Due Date |
| Photometer | 76INCH SPHERE IN0058 | 12/16/2025 | 6/16/2026 |
| Power Meter | XITRON INXT2011004 | 10/21/2025 | 10/21/2026 |
| AC Power Source | CHROMA 61603 IN0063 | 10/21/2025 | 10/21/2026 |
| DC Power Source | AGILENT E3634A IN0208 | 10/21/2025 | 10/21/2026 |
| Sphere Thermometer | ONSET IN0085 | 10/21/2025 | 10/21/2026 |
| Room Thermometer | ONSET IN0046 | 10/21/2025 | 10/21/2026 |

REPORT NUMBER: SP1-2510-581-4-R2

## CIE 1931 Chromaticity Diagram




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

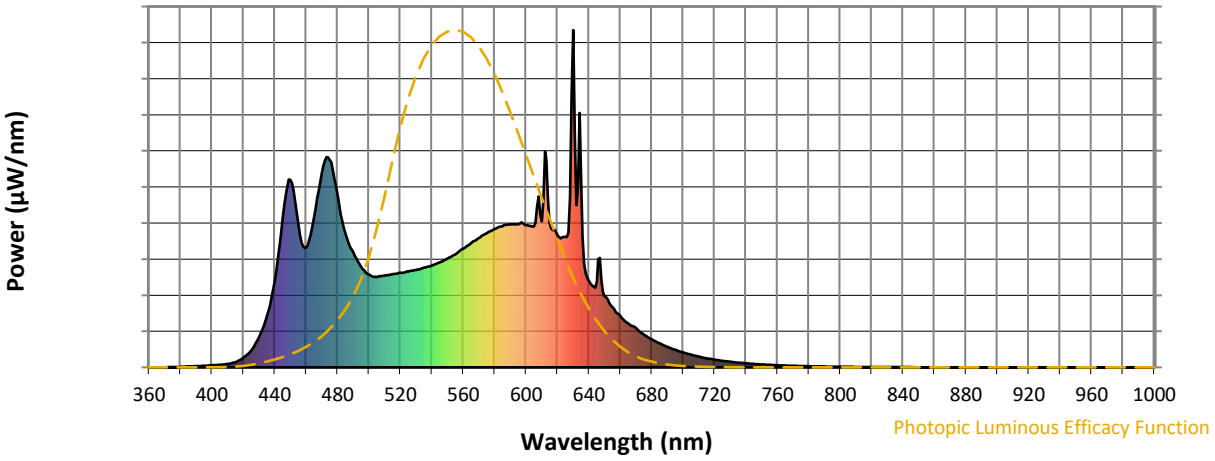



CCT = 4541K
CIE x = 0.3541
CIE y = 0.3316
Duv = -0.0141

Point lies outside the range

REPORT NUMBER: SP1-2510-581-4-R2

## Photopic Flux vs. Wavelength

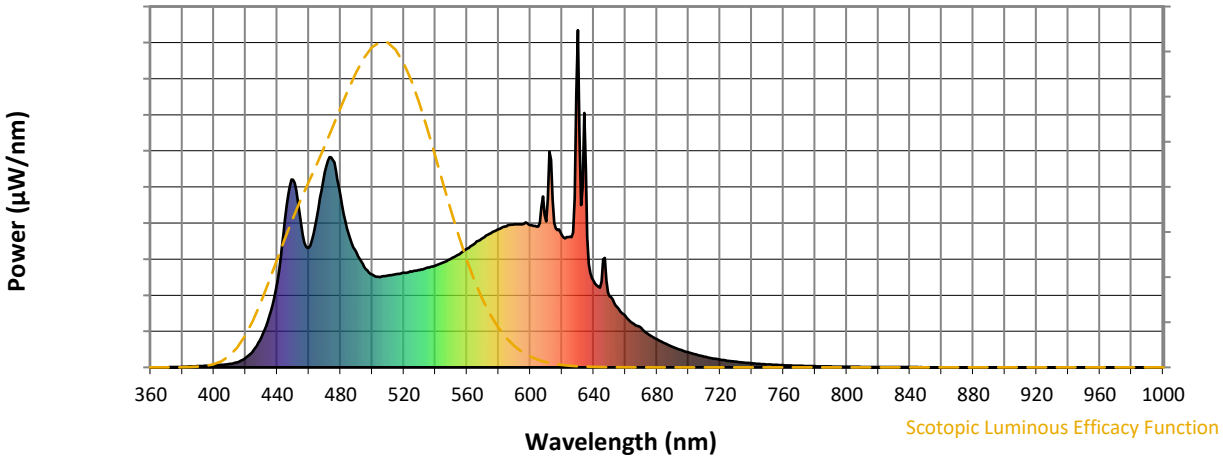



## Photopic Lumens: NR

| 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 | 341 | NR | 620 | 392 | NR | 750 | 9 | NR | 880 | 0 | NR |
| 365 | 0 | NR | 495 | 298 | NR | 625 | 387 | NR | 755 | 7 | NR | 885 | 0 | NR |
| 370 | 0 | NR | 500 | 275 | NR | 630 | 1000 | NR | 760 | 6 | NR | 890 | 0 | NR |
| 375 | 1 | NR | 505 | 267 | NR | 635 | 584 | NR | 765 | 5 | NR | 895 | 0 | NR |
| 380 | 2 | NR | 510 | 272 | NR | 640 | 256 | NR | 770 | 5 | NR | 900 | 0 | NR |
| 385 | 2 | NR | 515 | 276 | NR | 645 | 254 | NR | 775 | 4 | NR | 905 | 0 | NR |
| 390 | 3 | NR | 520 | 281 | NR | 650 | 210 | NR | 780 | 3 | NR | 910 | 0 | NR |
| 395 | 5 | NR | 525 | 284 | NR | 655 | 179 | NR | 785 | 3 | NR | 915 | 0 | NR |
| 400 | 6 | NR | 530 | 289 | NR | 660 | 152 | NR | 790 | 2 | NR | 920 | 0 | NR |
| 405 | 8 | NR | 535 | 296 | NR | 665 | 130 | NR | 795 | 2 | NR | 925 | 0 | NR |
| 410 | 10 | NR | 540 | 301 | NR | 670 | 117 | NR | 800 | 2 | NR | 930 | 0 | NR |
| 415 | 16 | NR | 545 | 312 | NR | 675 | 97 | NR | 805 | 2 | NR | 935 | 0 | NR |
| 420 | 28 | NR | 550 | 323 | NR | 680 | 83 | NR | 810 | 1 | NR | 940 | 0 | NR |
| 425 | 51 | NR | 555 | 335 | NR | 685 | 71 | NR | 815 | 1 | NR | 945 | 0 | NR |
| 430 | 89 | NR | 560 | 352 | NR | 690 | 61 | NR | 820 | 1 | NR | 950 | 0 | NR |
| 435 | 153 | NR | 565 | 368 | NR | 695 | 52 | NR | 825 | 1 | NR | 955 | 0 | NR |
| 440 | 254 | NR | 570 | 384 | NR | 700 | 44 | NR | 830 | 1 | NR | 960 | 0 | NR |
| 445 | 443 | NR | 575 | 398 | NR | 705 | 38 | NR | 835 | 1 | NR | 965 | 0 | NR |
| 450 | 556 | NR | 580 | 410 | NR | 710 | 32 | NR | 840 | 1 | NR | 970 | 0 | NR |
| 455 | 426 | NR | 585 | 419 | NR | 715 | 27 | NR | 845 | 1 | NR | 975 | 0 | NR |
| 460 | 355 | NR | 590 | 424 | NR | 720 | 23 | NR | 850 | 0 | NR | 980 | 0 | NR |
| 465 | 444 | NR | 595 | 424 | NR | 725 | 19 | NR | 855 | 0 | NR | 985 | 0 | NR |
| 470 | 579 | NR | 600 | 422 | NR | 730 | 17 | NR | 860 | 0 | NR | 990 | 0 | NR |
| 475 | 615 | NR | 605 | 418 | NR | 735 | 14 | NR | 865 | 0 | NR | 995 | 0 | NR |
| 480 | 510 | NR | 610 | 433 | NR | 740 | 12 | NR | 870 | 0 | NR | 1000 | 0 | NR |
| 485 | 398 | NR | 615 | 428 | NR | 745 | 10 | NR | 875 | 0 | NR | | | |

REPORT NUMBER: SP1-2510-581-4-R2

## Scotopic Flux vs. Wavelength

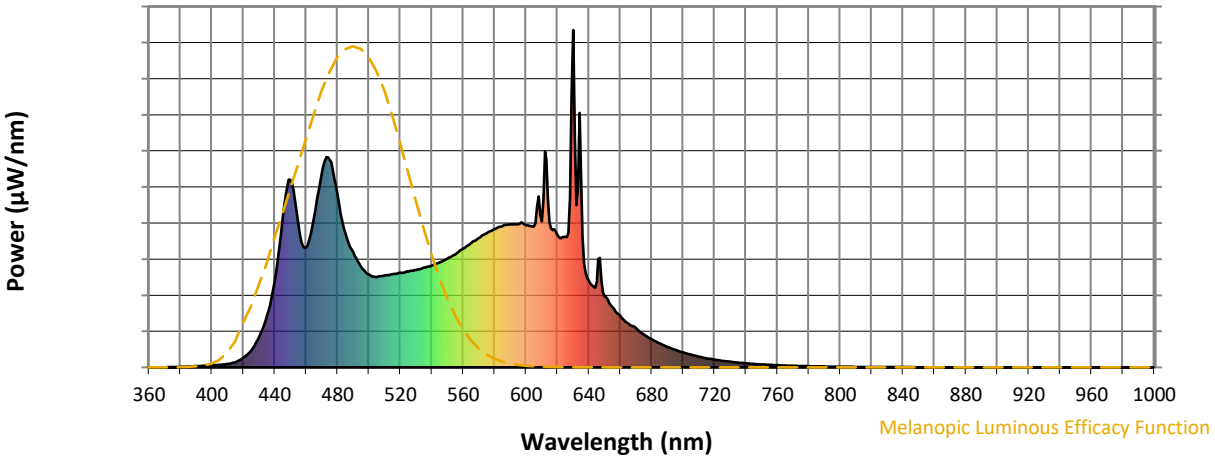



**Scotopic Lumens: NR** **S/P: 2.17**

| 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 | 341 | NR | 620 | 392 | NR | 750 | 9 | NR | 880 | 0 | NR |
| 365 | 0 | NR | 495 | 298 | NR | 625 | 387 | NR | 755 | 7 | NR | 885 | 0 | NR |
| 370 | 0 | NR | 500 | 275 | NR | 630 | 1000 | NR | 760 | 6 | NR | 890 | 0 | NR |
| 375 | 1 | NR | 505 | 267 | NR | 635 | 584 | NR | 765 | 5 | NR | 895 | 0 | NR |
| 380 | 2 | NR | 510 | 272 | NR | 640 | 256 | NR | 770 | 5 | NR | 900 | 0 | NR |
| 385 | 2 | NR | 515 | 276 | NR | 645 | 254 | NR | 775 | 4 | NR | 905 | 0 | NR |
| 390 | 3 | NR | 520 | 281 | NR | 650 | 210 | NR | 780 | 3 | NR | 910 | 0 | NR |
| 395 | 5 | NR | 525 | 284 | NR | 655 | 179 | NR | 785 | 3 | NR | 915 | 0 | NR |
| 400 | 6 | NR | 530 | 289 | NR | 660 | 152 | NR | 790 | 2 | NR | 920 | 0 | NR |
| 405 | 8 | NR | 535 | 296 | NR | 665 | 130 | NR | 795 | 2 | NR | 925 | 0 | NR |
| 410 | 10 | NR | 540 | 301 | NR | 670 | 117 | NR | 800 | 2 | NR | 930 | 0 | NR |
| 415 | 16 | NR | 545 | 312 | NR | 675 | 97 | NR | 805 | 2 | NR | 935 | 0 | NR |
| 420 | 28 | NR | 550 | 323 | NR | 680 | 83 | NR | 810 | 1 | NR | 940 | 0 | NR |
| 425 | 51 | NR | 555 | 335 | NR | 685 | 71 | NR | 815 | 1 | NR | 945 | 0 | NR |
| 430 | 89 | NR | 560 | 352 | NR | 690 | 61 | NR | 820 | 1 | NR | 950 | 0 | NR |
| 435 | 153 | NR | 565 | 368 | NR | 695 | 52 | NR | 825 | 1 | NR | 955 | 0 | NR |
| 440 | 254 | NR | 570 | 384 | NR | 700 | 44 | NR | 830 | 1 | NR | 960 | 0 | NR |
| 445 | 443 | NR | 575 | 398 | NR | 705 | 38 | NR | 835 | 1 | NR | 965 | 0 | NR |
| 450 | 556 | NR | 580 | 410 | NR | 710 | 32 | NR | 840 | 1 | NR | 970 | 0 | NR |
| 455 | 426 | NR | 585 | 419 | NR | 715 | 27 | NR | 845 | 1 | NR | 975 | 0 | NR |
| 460 | 355 | NR | 590 | 424 | NR | 720 | 23 | NR | 850 | 0 | NR | 980 | 0 | NR |
| 465 | 444 | NR | 595 | 424 | NR | 725 | 19 | NR | 855 | 0 | NR | 985 | 0 | NR |
| 470 | 579 | NR | 600 | 422 | NR | 730 | 17 | NR | 860 | 0 | NR | 990 | 0 | NR |
| 475 | 615 | NR | 605 | 418 | NR | 735 | 14 | NR | 865 | 0 | NR | 995 | 0 | NR |
| 480 | 510 | NR | 610 | 433 | NR | 740 | 12 | NR | 870 | 0 | NR | 1000 | 0 | NR |
| 485 | 398 | NR | 615 | 428 | NR | 745 | 10 | NR | 875 | 0 | NR | | | |

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## Melanopic Flux vs. Wavelength




**Melanopic Lumens: NR** **M/P: 5.01**

| 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 | 341 | NR | 620 | 392 | NR | 750 | 9 | NR | 880 | 0 | NR |
| 365 | 0 | NR | 495 | 298 | NR | 625 | 387 | NR | 755 | 7 | NR | 885 | 0 | NR |
| 370 | 0 | NR | 500 | 275 | NR | 630 | 1000 | NR | 760 | 6 | NR | 890 | 0 | NR |
| 375 | 1 | NR | 505 | 267 | NR | 635 | 584 | NR | 765 | 5 | NR | 895 | 0 | NR |
| 380 | 2 | NR | 510 | 272 | NR | 640 | 256 | NR | 770 | 5 | NR | 900 | 0 | NR |
| 385 | 2 | NR | 515 | 276 | NR | 645 | 254 | NR | 775 | 4 | NR | 905 | 0 | NR |
| 390 | 3 | NR | 520 | 281 | NR | 650 | 210 | NR | 780 | 3 | NR | 910 | 0 | NR |
| 395 | 5 | NR | 525 | 284 | NR | 655 | 179 | NR | 785 | 3 | NR | 915 | 0 | NR |
| 400 | 6 | NR | 530 | 289 | NR | 660 | 152 | NR | 790 | 2 | NR | 920 | 0 | NR |
| 405 | 8 | NR | 535 | 296 | NR | 665 | 130 | NR | 795 | 2 | NR | 925 | 0 | NR |
| 410 | 10 | NR | 540 | 301 | NR | 670 | 117 | NR | 800 | 2 | NR | 930 | 0 | NR |
| 415 | 16 | NR | 545 | 312 | NR | 675 | 97 | NR | 805 | 2 | NR | 935 | 0 | NR |
| 420 | 28 | NR | 550 | 323 | NR | 680 | 83 | NR | 810 | 1 | NR | 940 | 0 | NR |
| 425 | 51 | NR | 555 | 335 | NR | 685 | 71 | NR | 815 | 1 | NR | 945 | 0 | NR |
| 430 | 89 | NR | 560 | 352 | NR | 690 | 61 | NR | 820 | 1 | NR | 950 | 0 | NR |
| 435 | 153 | NR | 565 | 368 | NR | 695 | 52 | NR | 825 | 1 | NR | 955 | 0 | NR |
| 440 | 254 | NR | 570 | 384 | NR | 700 | 44 | NR | 830 | 1 | NR | 960 | 0 | NR |
| 445 | 443 | NR | 575 | 398 | NR | 705 | 38 | NR | 835 | 1 | NR | 965 | 0 | NR |
| 450 | 556 | NR | 580 | 410 | NR | 710 | 32 | NR | 840 | 1 | NR | 970 | 0 | NR |
| 455 | 426 | NR | 585 | 419 | NR | 715 | 27 | NR | 845 | 1 | NR | 975 | 0 | NR |
| 460 | 355 | NR | 590 | 424 | NR | 720 | 23 | NR | 850 | 0 | NR | 980 | 0 | NR |
| 465 | 444 | NR | 595 | 424 | NR | 725 | 19 | NR | 855 | 0 | NR | 985 | 0 | NR |
| 470 | 579 | NR | 600 | 422 | NR | 730 | 17 | NR | 860 | 0 | NR | 990 | 0 | NR |
| 475 | 615 | NR | 605 | 418 | NR | 735 | 14 | NR | 865 | 0 | NR | 995 | 0 | NR |
| 480 | 510 | NR | 610 | 433 | NR | 740 | 12 | NR | 870 | 0 | NR | 1000 | 0 | NR |
| 485 | 398 | NR | 615 | 428 | NR | 745 | 10 | NR | 875 | 0 | NR | | | |

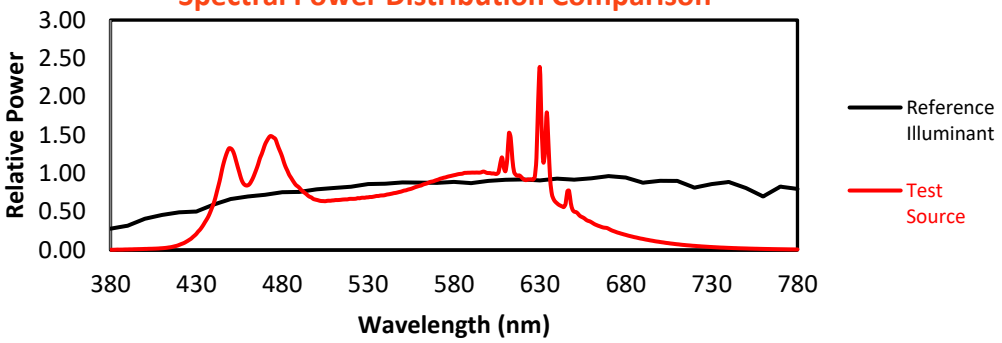
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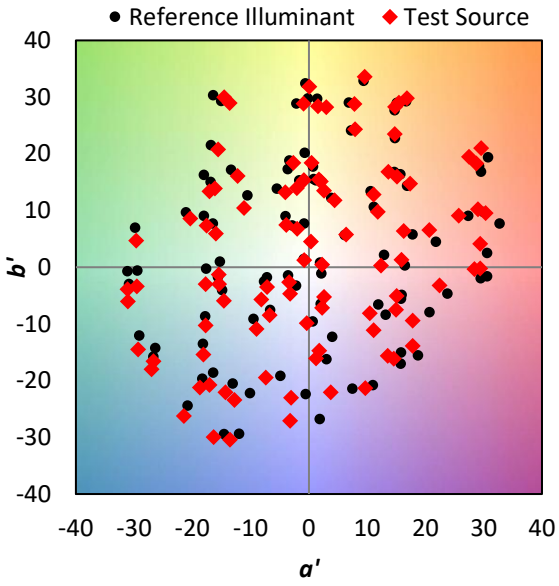
## Summary

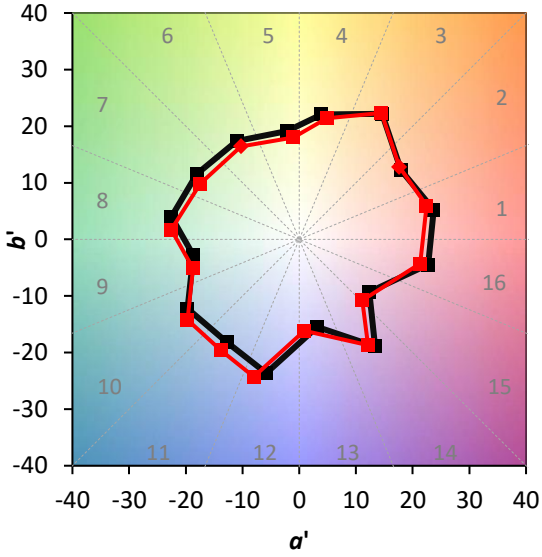
$R_f$ = 87.2
$R_g$ = 96.7
CIE $R_a$ = 86.3
$R_9$ = 86.2

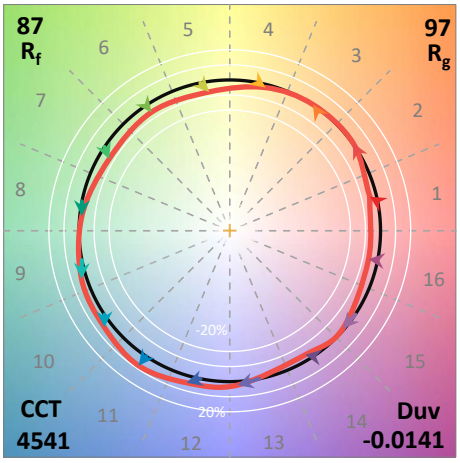
## Spectral Power Distribution Comparison

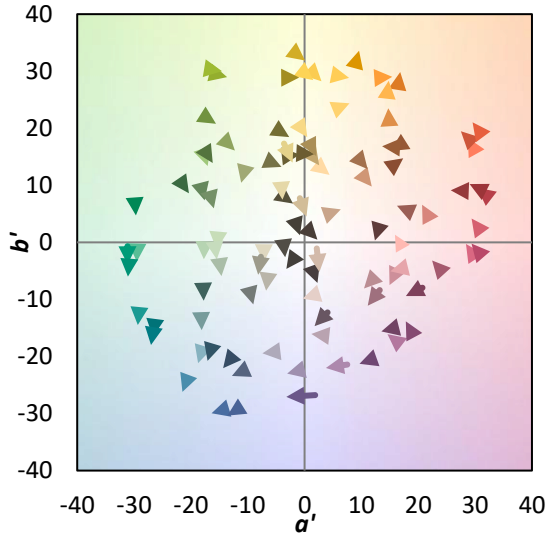



## Color Vector Graphics



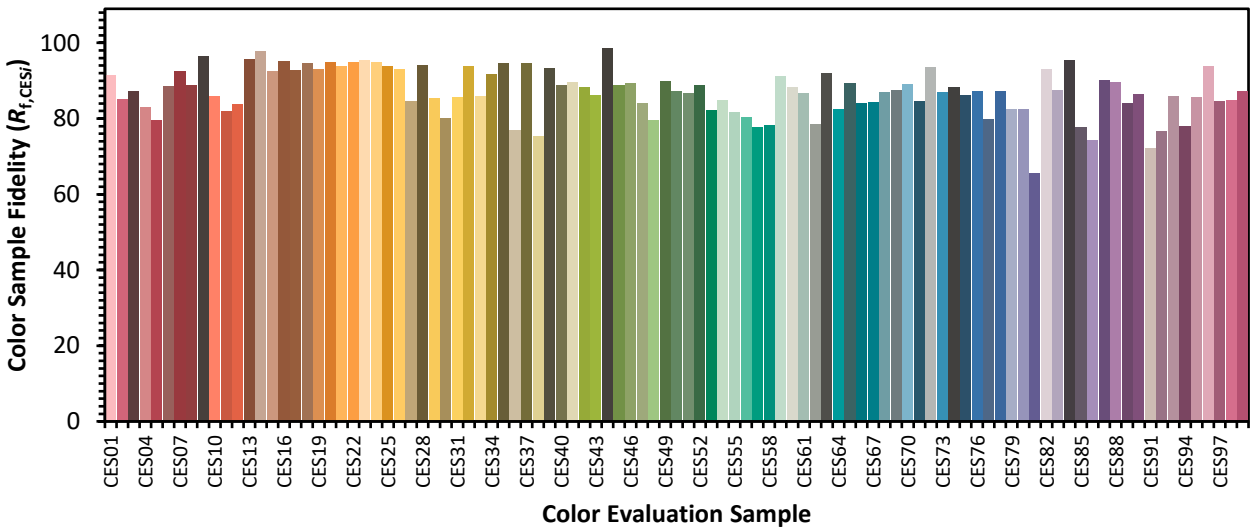



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## Individual Sample Fidelity Index ($R_{f,i}$)

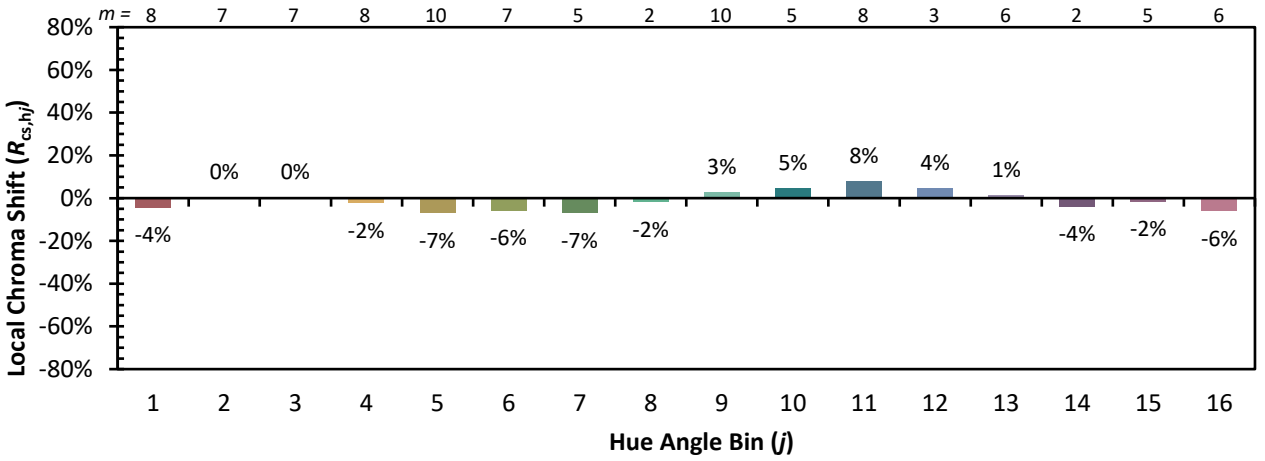
| | | | |
|---|---|---|---|
| CES01 = 86 | CES26 = 93 | CES51 = 87 | CES76 = 87 |
| CES02 = 62 | CES27 = 85 | CES52 = 89 | CES77 = 80 |
| CES03 = 31 | CES28 = 94 | CES53 = 82 | CES78 = 87 |
| CES04 = 69 | CES29 = 85 | CES54 = 85 | CES79 = 83 |
| CES05 = 49 | CES30 = 80 | CES55 = 82 | CES80 = 83 |
| CES06 = 50 | CES31 = 86 | CES56 = 80 | CES81 = 66 |
| CES07 = 42 | CES32 = 94 | CES57 = 78 | CES82 = 93 |
| CES08 = 41 | CES33 = 86 | CES58 = 78 | CES83 = 88 |
| CES09 = 29 | CES34 = 92 | CES59 = 91 | CES84 = 96 |
| CES10 = 75 | CES35 = 95 | CES60 = 88 | CES85 = 78 |
| CES11 = 57 | CES36 = 77 | CES61 = 87 | CES86 = 74 |
| CES12 = 63 | CES37 = 95 | CES62 = 79 | CES87 = 90 |
| CES13 = 43 | CES38 = 75 | CES63 = 92 | CES88 = 90 |
| CES14 = 74 | CES39 = 93 | CES64 = 82 | CES89 = 84 |
| CES15 = 71 | CES40 = 89 | CES65 = 89 | CES90 = 87 |
| CES16 = 47 | CES41 = 90 | CES66 = 84 | CES91 = 72 |
| CES17 = 49 | CES42 = 88 | CES67 = 84 | CES92 = 77 |
| CES18 = 56 | CES43 = 86 | CES68 = 87 | CES93 = 86 |
| CES19 = 71 | CES44 = 99 | CES69 = 87 | CES94 = 78 |
| CES20 = 66 | CES45 = 89 | CES70 = 89 | CES95 = 86 |
| CES21 = 85 | CES46 = 89 | CES71 = 85 | CES96 = 94 |
| CES22 = 78 | CES47 = 84 | CES72 = 94 | CES97 = 85 |
| CES23 = 91 | CES48 = 79 | CES73 = 87 | CES98 = 85 |
| CES24 = 90 | CES49 = 90 | CES74 = 88 | CES99 = 87 |
| CES25 = 71 | CES50 = 87 | CES75 = 86 | |

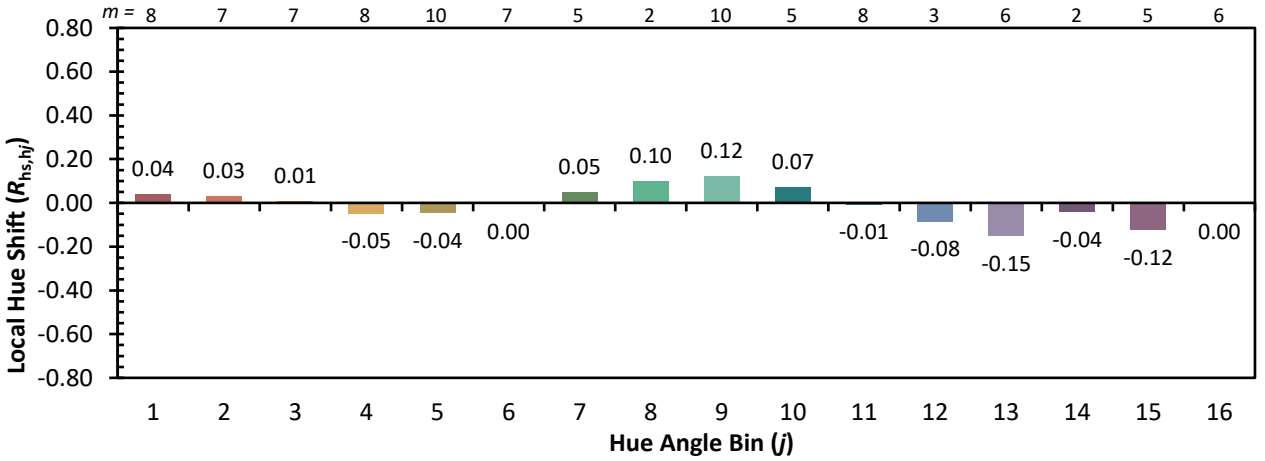


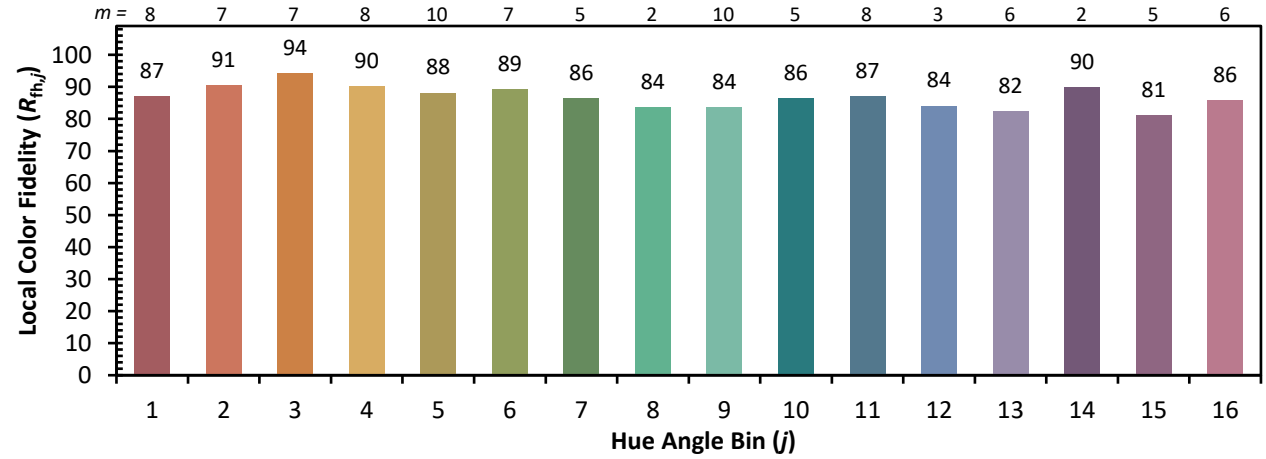
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## Color Rendition by Hue-Angle Bin



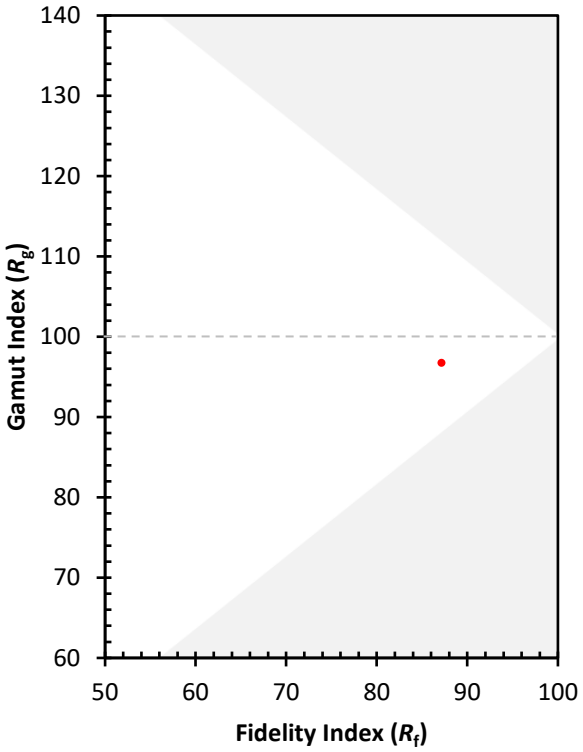



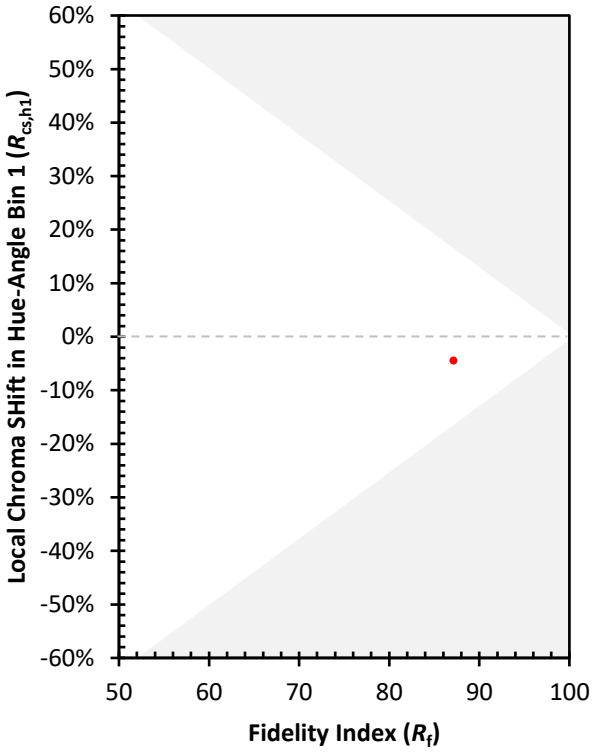



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## Measure Comparisons




(END OF REPORT)