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: P1559294

Luminaire Tested: 24CGTX-40-B2750-W2D-3500K

Issue Date: 9/2/2026

Report Generated By 670265710 / DESKTOP-98SHLC4

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

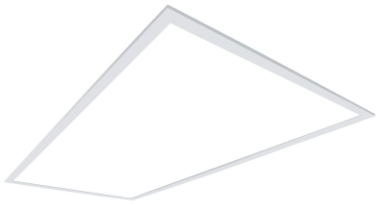
Scaled Data Report

**Test Information**

| | |
|---|---|
| Test Method: | LM-79-2019 |
| Report Number: | P1559294 |
| | TEST IS SCALED FROM IESNA LM-79-24 TEST DATA (G3-2510-581-24) |
| Test Lab: | COOPER LIGHTING SOLUTIONS |
| Issue Date: | 9/2/2026 |
| Manufacturer: | COOPER LIGHTING SOLUTIONS |
| Product Line: | METALUX |
| | |
| Catalog Number: | 24CGTX-40-B2750-W2D-3500K |
| Description: | 2X4 4000 LUMEN CGTX TROFFER WITH BIO UP LEDS AT 3500K CCT WITH FROSTED SMOOTH l |
| Light Source: | 3500K CCT, 80 CRI LEDS |
| Ballast/Driver: | - |

**Summary**

| | |
|---|---|
| Lumens per Lamp: | N/A |
| Luminaire Lumens: | 4185.4 lumens |
| Efficiency: | N/A |
| Efficacy: | 114.7 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): | 36.5 |
| 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 |

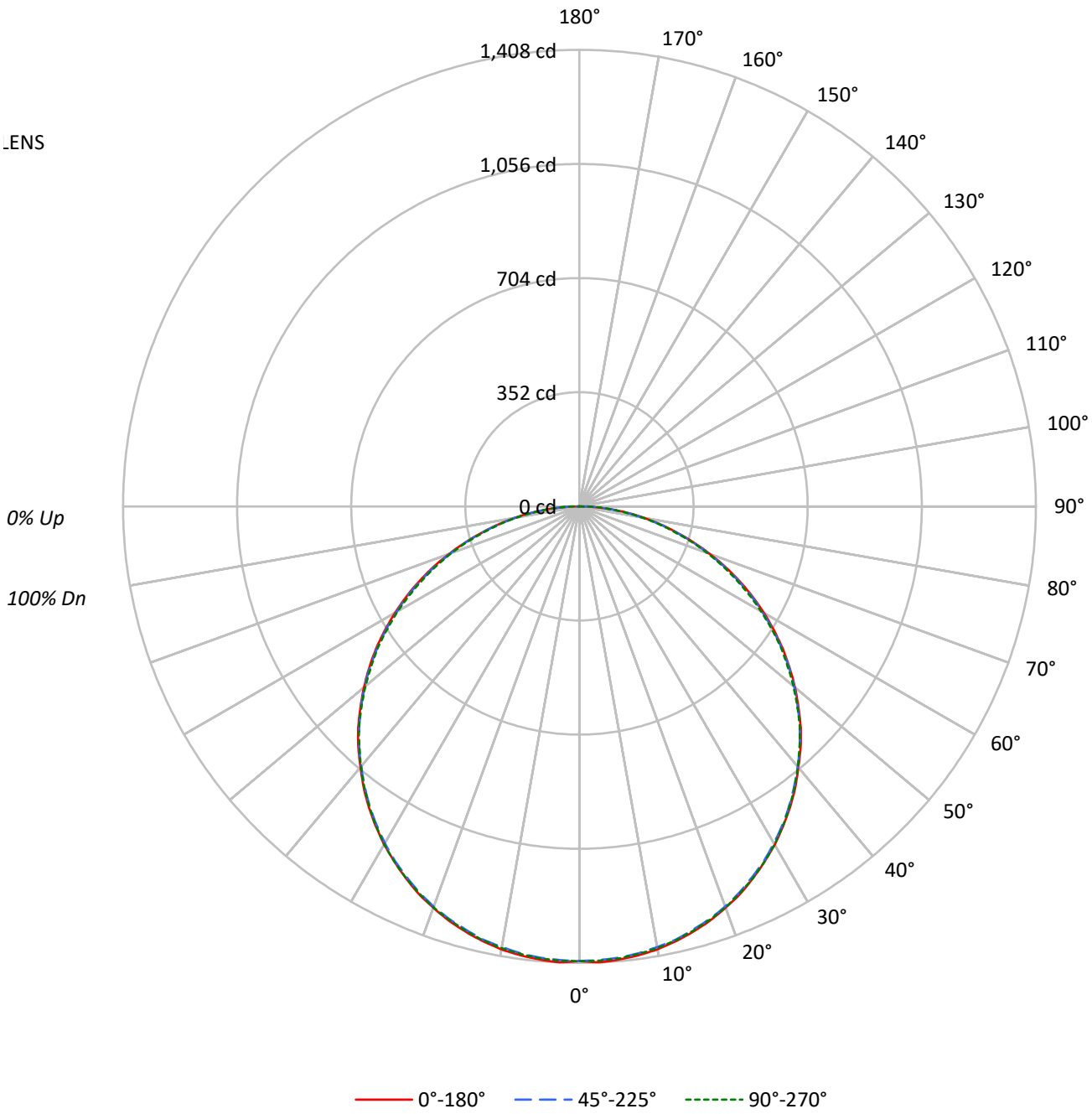


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1121 Highway 74 South
Peachtree City, GA 30269

Scaled Data Report

TEST NUMBER: P1559294
CATALOG NUMBER: 24CGTX-40-B2750-W2D-3500K

## Luminous Intensity Polar Plot



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Scaled Data Report

TEST NUMBER: P1559294
CATALOG NUMBER: 24CGTX-40-B2750-W2D-3500K

## 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 | 78 | 70 | 63 | 87 | 77 | 69 | 63 | 74 | 67 | 62 | 71 | 65 | 61 | 68 | 64 | 60 | 57 |
| 4 | 82 | 69 | 60 | 53 | 79 | 68 | 60 | 53 | 65 | 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 | 46 | 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 | 25 | 51 | 38 | 31 | 25 | 37 | 30 | 25 | 36 | 30 | 25 | 35 | 29 | 25 | 23 |

## AVERAGE LUMINANCE (cd/sqm):

| | 0° | 45° | 90° |
|---|---|---|---|
| 0° | 1887 | 1887 | 1887 |
| 5° | 1895 | 1887 | 1890 |
| 10° | 1895 | 1886 | 1890 |
| 15° | 1892 | 1883 | 1887 |
| 20° | 1887 | 1881 | 1885 |
| 25° | 1880 | 1872 | 1878 |
| 30° | 1872 | 1864 | 1870 |
| 35° | 1861 | 1853 | 1856 |
| 40° | 1845 | 1839 | 1841 |
| 45° | 1837 | 1828 | 1830 |
| 50° | 1816 | 1810 | 1804 |
| 55° | 1796 | 1784 | 1780 |
| 60° | 1767 | 1751 | 1740 |
| 65° | 1734 | 1712 | 1696 |
| 70° | 1679 | 1663 | 1643 |
| 75° | 1615 | 1605 | 1568 |
| 80° | 1548 | 1524 | 1501 |
| 85° | 1402 | 1386 | 1386 |

## MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°
Vertical Angle: 45°
Luminance: 1837 cd/sqm

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Scaled Data Report

TEST NUMBER: P1559294
CATALOG NUMBER: 24CGTX-40-B2750-W2D-3500K

**ZONAL LUMENS:**

| Zone | Lumens | % Fixture |
|---|---|---|
| 0°-10° | 133.0 | 3.2 |
| 10°-20° | 382.3 | 9.1 |
| 20°-30° | 582.3 | 13.9 |
| 30°-40° | 706.7 | 16.9 |
| 40°-50° | 740.9 | 17.7 |
| 50°-60° | 679.9 | 16.2 |
| 60°-70° | 532.5 | 12.7 |
| 70°-80° | 325.3 | 7.8 |
| 80°-90° | 102.5 | 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° | 1097.5 | 26.2 |
| 0°-40° | 1804.2 | 43.1 |
| 0°-60° | 3225.0 | 77.1 |
| 0°-90° | 4185.4 | 100.0 |
| 90°-120° | 0.0 | 0.0 |
| 90°-150° | 0.0 | 0.0 |
| 90°-180° | 0.0 | 0.0 |
| 0°-180° | 4185.4 | 100.0 |

**CANDELA DISTRIBUTION:**

| | 0° | 22.5° | 45° | 67.5° | 90° | Flux |
|---|---|---|---|---|---|---|
| 0° | 1402 | 1402 | 1402 | 1402 | 1402 | |
| 5° | 1403 | 1399 | 1397 | 1395 | 1399 | 133 |
| 15° | 1358 | 1354 | 1352 | 1352 | 1355 | 383 |
| 25° | 1266 | 1263 | 1261 | 1262 | 1265 | 584 |
| 35° | 1133 | 1131 | 1128 | 1128 | 1130 | 709 |
| 45° | 966 | 962 | 960 | 958 | 962 | 744 |
| 55° | 766 | 764 | 761 | 759 | 759 | 684 |
| 65° | 545 | 542 | 538 | 534 | 533 | 538 |
| 75° | 311 | 310 | 309 | 303 | 302 | 330 |
| 85° | 91 | 92 | 90 | 90 | 90 | 103 |
| 90° | 0 | 0 | 0 | 0 | 0 | |

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Peachtree City, GA 30269

Scaled Data Report

TEST NUMBER: P1559294
CATALOG NUMBER: 24CGTX-40-B2750-W2D-3500K

**CANDELA DISTRIBUTION (FULL):**

| | 0° | 22.5° | 45° | 67.5° | 90° |
|---|---|---|---|---|---|
| 0° | *1402.4* | 1402.4 | 1402.4 | 1402.4 | 1402.4 |
| 2.5° | *1407.5* | *1403.4* | *1400.4* | *1399.4* | *1402.4* |
| 5° | *1403.4* | 1399.4 | 1397.4 | 1395.3 | 1399.4 |
| 7.5° | *1396.4* | 1392.3 | 1390.3 | 1389.3 | 1392.3 |
| 10° | *1387.3* | 1382.2 | 1380.2 | 1380.2 | 1383.2 |
| 12.5° | *1374.2* | 1371.1 | 1369.1 | 1369.1 | 1371.1 |
| 15° | *1358.0* | 1354.0 | 1352.0 | 1352.0 | 1355.0 |
| 17.5° | *1339.9* | 1336.8 | 1334.8 | 1333.8 | 1336.8 |
| 20° | *1317.7* | 1314.6 | 1313.6 | 1312.6 | 1316.7 |
| 22.5° | *1294.5* | 1290.4 | 1289.4 | 1288.4 | 1291.4 |
| 25° | *1266.2* | 1263.2 | 1261.2 | 1262.2 | 1265.2 |
| 27.5° | *1235.9* | 1233.9 | 1232.9 | 1231.9 | 1235.9 |
| 30° | *1204.7* | 1201.6 | 1199.6 | 1200.6 | 1203.7 |
| 32.5° | *1169.3* | 1167.3 | 1165.3 | 1165.3 | 1168.3 |
| 35° | *1133.0* | 1131.0 | 1128.0 | 1128.0 | 1130.0 |
| 37.5° | *1093.7* | 1091.7 | 1088.6 | 1088.6 | 1090.7 |
| 40° | *1050.3* | 1050.3 | 1047.3 | 1048.3 | 1048.3 |
| 42.5° | *1009.9* | 1007.9 | 1005.9 | 1003.9 | 1004.9 |
| 45° | *965.5* | 962.5 | 960.5 | 958.5 | 961.5 |
| 47.5° | *916.1* | 914.1 | 913.1 | 911.1 | 911.1 |
| 50° | *867.7* | 865.7 | 864.7 | 861.6 | 861.6 |
| 52.5° | *817.2* | 815.2 | 814.2 | 810.2 | 809.2 |
| 55° | *765.8* | 763.8 | 760.7 | 758.7 | 758.7 |
| 57.5° | *711.3* | 709.3 | 707.3 | 704.2 | 702.2 |
| 60° | *656.8* | 655.8 | 650.8 | 647.7 | 646.7 |
| 62.5° | *601.3* | 599.3 | 597.3 | 592.2 | 589.2 |
| 65° | *544.8* | 541.8 | 537.8 | 533.7 | 532.7 |
| 67.5° | *486.3* | 485.3 | 481.3 | 475.2 | 475.2 |
| 70° | *426.8* | 426.8 | 422.7 | 418.7 | 417.7 |
| 72.5° | *369.3* | 369.3 | 365.2 | 362.2 | 360.2 |
| 75° | *310.7* | 309.7 | 308.7 | 302.7 | 301.7 |
| 77.5° | *256.3* | 254.2 | 252.2 | 248.2 | 248.2 |
| 80° | *199.8* | 197.7 | 196.7 | 194.7 | 193.7 |
| 82.5° | *146.3* | 142.3 | 143.3 | 140.2 | 139.2 |
| 85° | *90.8* | 91.8 | 89.8 | 89.8 | 89.8 |
| 87.5° | *42.4* | 42.4 | 46.4 | 49.4 | 49.4 |
| 90° | *0.0* | 0.0 | 0.0 | 0.0 | 0.0 |

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TEST NUMBER: P1559294
CATALOG NUMBER: 24CGTX-40-B2750-W2D-3500K

**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 | 14.23 | 15.89 | 14.59 | 16.21 | 16.52 | 14.17 | 15.83 | 14.53 | 16.15 | 16.46 |
| | 3H | 16.18 | 17.69 | 16.55 | 18.01 | 18.37 | 16.08 | 17.59 | 16.45 | 17.91 | 18.27 |
| | 4H | 16.94 | 18.37 | 17.34 | 18.71 | 19.09 | 16.82 | 18.25 | 17.22 | 18.60 | 18.97 |
| | 6H | 17.55 | 18.87 | 17.96 | 19.24 | 19.63 | 17.42 | 18.74 | 17.83 | 19.11 | 19.50 |
| | 8H | 17.77 | 19.03 | 18.19 | 19.42 | 19.82 | 17.63 | 18.89 | 18.05 | 19.28 | 19.68 |
| | 12H | 17.92 | 19.13 | 18.35 | 19.52 | 19.94 | 17.78 | 18.99 | 18.21 | 19.37 | 19.80 |
| 4H | 2H | 14.89 | 16.32 | 15.29 | 16.66 | 17.04 | 14.84 | 16.27 | 15.24 | 16.62 | 16.99 |
| | 3H | 17.07 | 18.27 | 17.48 | 18.67 | 19.07 | 16.98 | 18.18 | 17.39 | 18.58 | 18.98 |
| | 4H | 17.97 | 19.06 | 18.40 | 19.47 | 19.91 | 17.87 | 18.95 | 18.30 | 19.37 | 19.80 |
| | 6H | 18.72 | 19.68 | 19.18 | 20.12 | 20.57 | 18.60 | 19.56 | 19.06 | 20.00 | 20.45 |
| | 8H | 19.00 | 19.89 | 19.46 | 20.33 | 20.80 | 18.87 | 19.76 | 19.33 | 20.20 | 20.67 |
| | 12H | 19.20 | 20.01 | 19.68 | 20.48 | 20.95 | 19.07 | 19.88 | 19.55 | 20.35 | 20.82 |
| 8H | 4H | 18.33 | 19.22 | 18.79 | 19.66 | 20.13 | 18.24 | 19.13 | 18.69 | 19.57 | 20.04 |
| | 6H | 19.22 | 19.97 | 19.71 | 20.45 | 20.93 | 19.11 | 19.86 | 19.61 | 20.35 | 20.82 |
| | 8H | 19.58 | 20.25 | 20.09 | 20.75 | 21.24 | 19.46 | 20.13 | 19.97 | 20.64 | 21.12 |
| | 12H | 19.88 | 20.47 | 20.38 | 20.96 | 21.52 | 19.76 | 20.35 | 20.26 | 20.84 | 21.40 |
| 12H | 4H | 18.38 | 19.18 | 18.85 | 19.66 | 20.12 | 18.29 | 19.09 | 18.77 | 19.57 | 20.04 |
| | 6H | 19.30 | 19.97 | 19.80 | 20.47 | 20.96 | 19.20 | 19.87 | 19.70 | 20.37 | 20.86 |
| | 8H | 19.72 | 20.32 | 20.23 | 20.80 | 21.36 | 19.61 | 20.21 | 20.12 | 20.69 | 21.25 |

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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: SP1-2510-581-8-R2

Test Date: 02/03/2026

Luminaire Tested: 24CGTX-45-B2750-W2D-3500K

Data in this report applies to families of products including 24CGTX-45-UNV

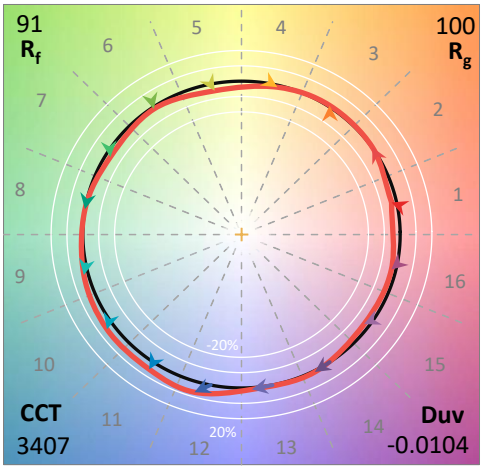
Report Generated By FNC07603 / LDUCLS01DT446
Version: v7.05

## Test Information

| | |
|---|---|
| Test Method: | LM-79-2019 |
| Report Number: | SP1-2510-581-8-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-45-B2750-W2D-3500K** |
| Description: | *THIS IS A REVISION OF REPORT SP1-2510-581-8-R2 TO UPDATE THE CATALOG INFORMATION*2X4 CGTX 4500 lumen with BioUp Boards - 3500K |

## Spectral Parameters

| | | | | | |
|---|---|---|---|---|---|
| CCT (K): | 3407 | CRI (Ra): | 90.6 | | |
| CIE u': | 0.2428 | R1: | 93.7 | R9: | 86.5 |
| CIE v': | 0.4992 | R2: | 90.5 | R10: | 82.1 |
| Duv: | -0.0104 | R3: | 90.2 | R11: | 96.0 |
| CIE x: | 0.3996 | R4: | 96.7 | R12: | 75.0 |
| CIE y: | 0.3651 | R5: | 92.5 | R13: | 92.1 |
| CIE z: | 0.2353 | R6: | 83.5 | R14: | 96.1 |
| Peak Wavelength (nm): | 630 | R7: | 88.1 | R15: | 95.7 |
| Dominant Wavelength (nm): | 587 | R8: | 89.8 | | |
| Purity: | 29.46494 | | | | |
| Rf: | 90.9 | | | | |
| Rg: | 99.5 | | | | |



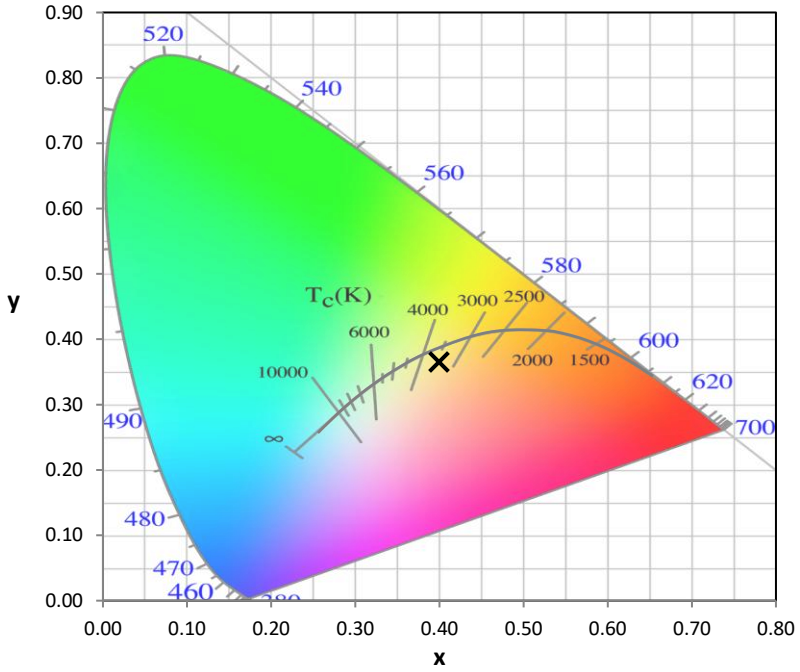

## Test Conditions

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

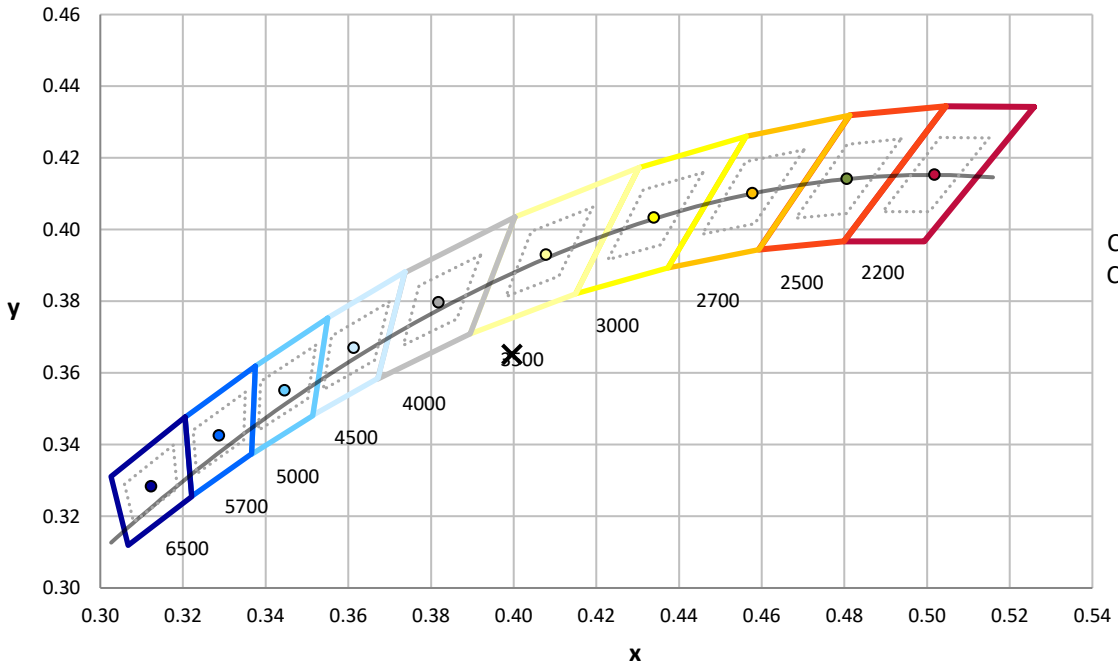
| Measurement and Test Equipment | | | |
|---|---|---|---|
| Instrument | Identification Number | Calibration Date | Calibration Due Date |
| Photometer | 76INCH SPHERE IN0058 | 12/16/2025 | 6/16/2026 |
| Power Meter | XITRON INXT2011004 | 10/21/2025 | 10/21/2026 |
| AC Power Source | CHROMA 61603 IN0063 | 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: SP1-2510-581-8-R2

## CIE 1931 Chromaticity Diagram




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

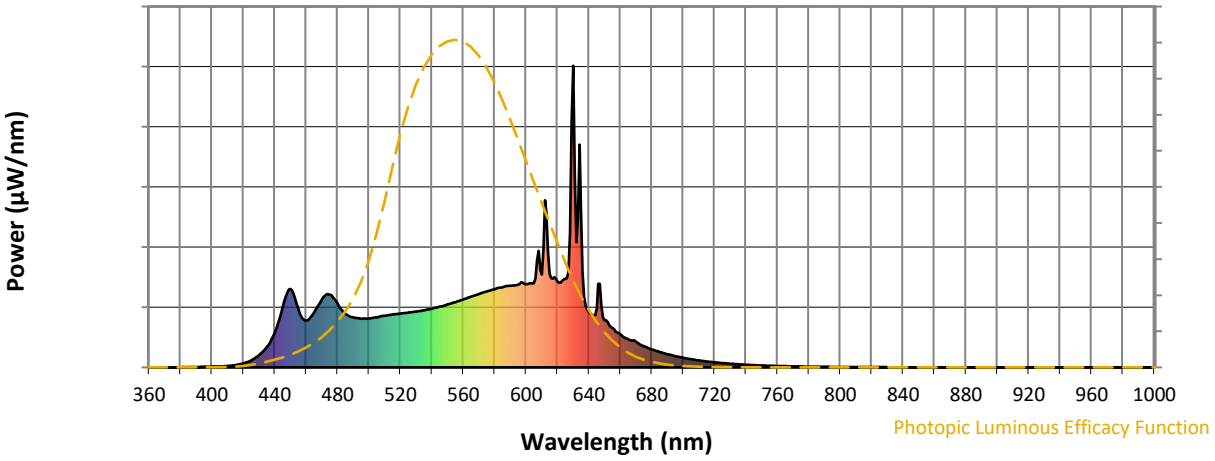



CCT = 3407K
CIE x = 0.3996
CIE y = 0.3651
Duv = -0.0104

Point lies outside the range

REPORT NUMBER: SP1-2510-581-8-R2

## Photopic Flux vs. Wavelength

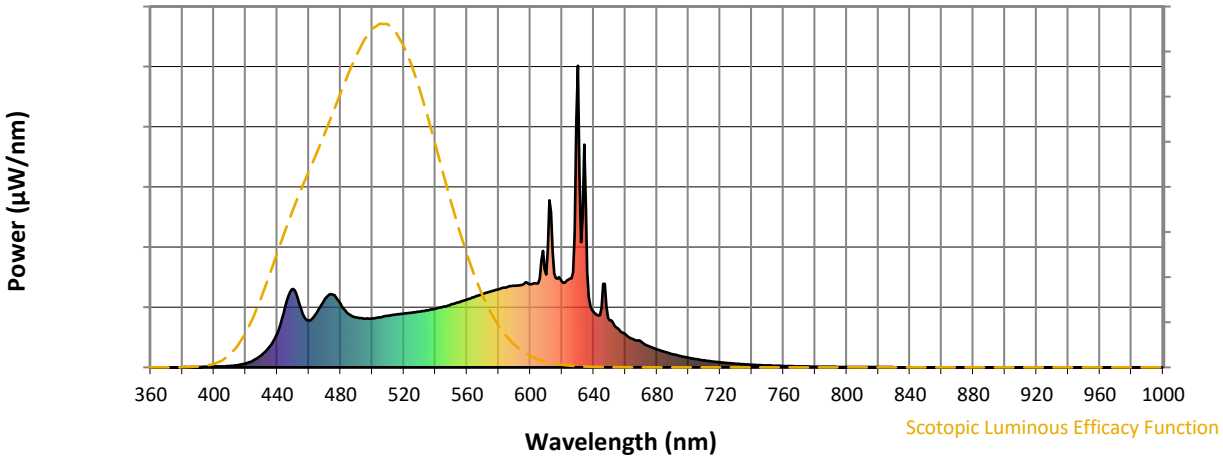



## Photopic Lumens: NR

| 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 | 165 | NR | 620 | 285 | NR | 750 | 6 | NR | 880 | 0 | NR |
| 365 | 0 | NR | 495 | 161 | NR | 625 | 293 | NR | 755 | 5 | NR | 885 | 0 | NR |
| 370 | 0 | NR | 500 | 162 | NR | 630 | 1000 | NR | 760 | 5 | NR | 890 | 0 | NR |
| 375 | 0 | NR | 505 | 166 | NR | 635 | 530 | NR | 765 | 4 | NR | 895 | 0 | NR |
| 380 | 0 | NR | 510 | 171 | NR | 640 | 184 | NR | 770 | 3 | NR | 900 | 0 | NR |
| 385 | 1 | NR | 515 | 175 | NR | 645 | 198 | NR | 775 | 3 | NR | 905 | 0 | NR |
| 390 | 1 | NR | 520 | 178 | NR | 650 | 156 | NR | 780 | 2 | NR | 910 | 0 | NR |
| 395 | 2 | NR | 525 | 182 | NR | 655 | 131 | NR | 785 | 2 | NR | 915 | 0 | NR |
| 400 | 3 | NR | 530 | 185 | NR | 660 | 110 | NR | 790 | 2 | NR | 920 | 0 | NR |
| 405 | 3 | NR | 535 | 189 | NR | 665 | 93 | NR | 795 | 2 | NR | 925 | 0 | NR |
| 410 | 5 | NR | 540 | 194 | NR | 670 | 85 | NR | 800 | 1 | NR | 930 | 0 | NR |
| 415 | 8 | NR | 545 | 201 | NR | 675 | 70 | NR | 805 | 1 | NR | 935 | 0 | NR |
| 420 | 13 | NR | 550 | 209 | NR | 680 | 60 | NR | 810 | 1 | NR | 940 | 0 | NR |
| 425 | 23 | NR | 555 | 216 | NR | 685 | 51 | NR | 815 | 1 | NR | 945 | 0 | NR |
| 430 | 40 | NR | 560 | 225 | NR | 690 | 44 | NR | 820 | 1 | NR | 950 | 0 | NR |
| 435 | 68 | NR | 565 | 234 | NR | 695 | 37 | NR | 825 | 1 | NR | 955 | 0 | NR |
| 440 | 114 | NR | 570 | 243 | NR | 700 | 32 | NR | 830 | 1 | NR | 960 | 0 | NR |
| 445 | 200 | NR | 575 | 251 | NR | 705 | 27 | NR | 835 | 1 | NR | 965 | 0 | NR |
| 450 | 260 | NR | 580 | 259 | NR | 710 | 23 | NR | 840 | 0 | NR | 970 | 0 | NR |
| 455 | 194 | NR | 585 | 266 | NR | 715 | 19 | NR | 845 | 0 | NR | 975 | 0 | NR |
| 460 | 155 | NR | 590 | 271 | NR | 720 | 17 | NR | 850 | 0 | NR | 980 | 0 | NR |
| 465 | 182 | NR | 595 | 273 | NR | 725 | 14 | NR | 855 | 0 | NR | 985 | 0 | NR |
| 470 | 226 | NR | 600 | 276 | NR | 730 | 12 | NR | 860 | 0 | NR | 990 | 0 | NR |
| 475 | 241 | NR | 605 | 279 | NR | 735 | 10 | NR | 865 | 0 | NR | 995 | 0 | NR |
| 480 | 211 | NR | 610 | 307 | NR | 740 | 9 | NR | 870 | 0 | NR | 1000 | 0 | NR |
| 485 | 177 | NR | 615 | 311 | NR | 745 | 7 | NR | 875 | 0 | NR | | | |

REPORT NUMBER: SP1-2510-581-8-R2

## Scotopic Flux vs. Wavelength

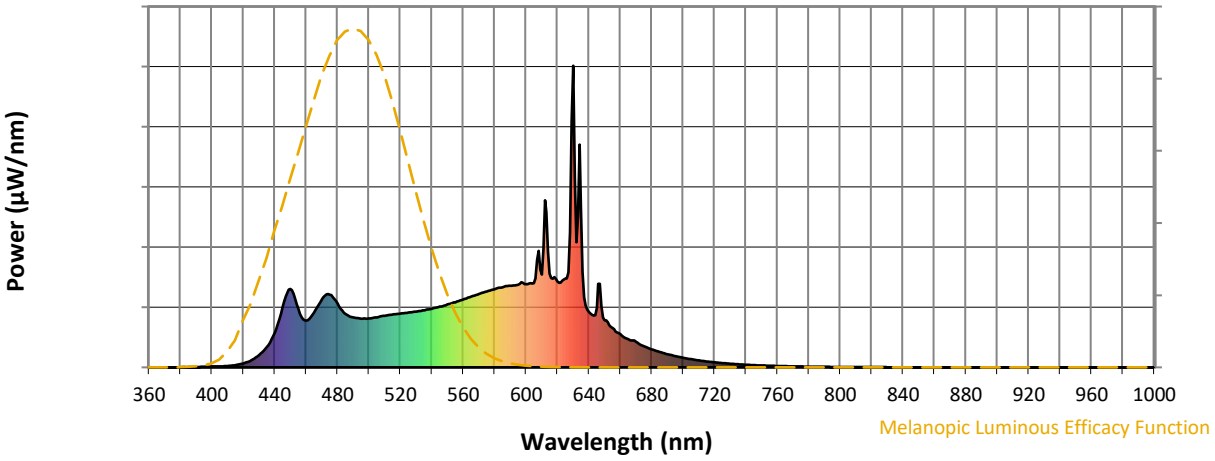



**Scotopic Lumens: NR** **S/P: 1.78**

| 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 | 165 | NR | 620 | 285 | NR | 750 | 6 | NR | 880 | 0 | NR |
| 365 | 0 | NR | 495 | 161 | NR | 625 | 293 | NR | 755 | 5 | NR | 885 | 0 | NR |
| 370 | 0 | NR | 500 | 162 | NR | 630 | 1000 | NR | 760 | 5 | NR | 890 | 0 | NR |
| 375 | 0 | NR | 505 | 166 | NR | 635 | 530 | NR | 765 | 4 | NR | 895 | 0 | NR |
| 380 | 0 | NR | 510 | 171 | NR | 640 | 184 | NR | 770 | 3 | NR | 900 | 0 | NR |
| 385 | 1 | NR | 515 | 175 | NR | 645 | 198 | NR | 775 | 3 | NR | 905 | 0 | NR |
| 390 | 1 | NR | 520 | 178 | NR | 650 | 156 | NR | 780 | 2 | NR | 910 | 0 | NR |
| 395 | 2 | NR | 525 | 182 | NR | 655 | 131 | NR | 785 | 2 | NR | 915 | 0 | NR |
| 400 | 3 | NR | 530 | 185 | NR | 660 | 110 | NR | 790 | 2 | NR | 920 | 0 | NR |
| 405 | 3 | NR | 535 | 189 | NR | 665 | 93 | NR | 795 | 2 | NR | 925 | 0 | NR |
| 410 | 5 | NR | 540 | 194 | NR | 670 | 85 | NR | 800 | 1 | NR | 930 | 0 | NR |
| 415 | 8 | NR | 545 | 201 | NR | 675 | 70 | NR | 805 | 1 | NR | 935 | 0 | NR |
| 420 | 13 | NR | 550 | 209 | NR | 680 | 60 | NR | 810 | 1 | NR | 940 | 0 | NR |
| 425 | 23 | NR | 555 | 216 | NR | 685 | 51 | NR | 815 | 1 | NR | 945 | 0 | NR |
| 430 | 40 | NR | 560 | 225 | NR | 690 | 44 | NR | 820 | 1 | NR | 950 | 0 | NR |
| 435 | 68 | NR | 565 | 234 | NR | 695 | 37 | NR | 825 | 1 | NR | 955 | 0 | NR |
| 440 | 114 | NR | 570 | 243 | NR | 700 | 32 | NR | 830 | 1 | NR | 960 | 0 | NR |
| 445 | 200 | NR | 575 | 251 | NR | 705 | 27 | NR | 835 | 1 | NR | 965 | 0 | NR |
| 450 | 260 | NR | 580 | 259 | NR | 710 | 23 | NR | 840 | 0 | NR | 970 | 0 | NR |
| 455 | 194 | NR | 585 | 266 | NR | 715 | 19 | NR | 845 | 0 | NR | 975 | 0 | NR |
| 460 | 155 | NR | 590 | 271 | NR | 720 | 17 | NR | 850 | 0 | NR | 980 | 0 | NR |
| 465 | 182 | NR | 595 | 273 | NR | 725 | 14 | NR | 855 | 0 | NR | 985 | 0 | NR |
| 470 | 226 | NR | 600 | 276 | NR | 730 | 12 | NR | 860 | 0 | NR | 990 | 0 | NR |
| 475 | 241 | NR | 605 | 279 | NR | 735 | 10 | NR | 865 | 0 | NR | 995 | 0 | NR |
| 480 | 211 | NR | 610 | 307 | NR | 740 | 9 | NR | 870 | 0 | NR | 1000 | 0 | NR |
| 485 | 177 | NR | 615 | 311 | NR | 745 | 7 | NR | 875 | 0 | NR | | | |

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## Melanopic Flux vs. Wavelength




**Melanopic Lumens: NR** **M/P: 3.85**

| 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 | 165 | NR | 620 | 285 | NR | 750 | 6 | NR | 880 | 0 | NR |
| 365 | 0 | NR | 495 | 161 | NR | 625 | 293 | NR | 755 | 5 | NR | 885 | 0 | NR |
| 370 | 0 | NR | 500 | 162 | NR | 630 | 1000 | NR | 760 | 5 | NR | 890 | 0 | NR |
| 375 | 0 | NR | 505 | 166 | NR | 635 | 530 | NR | 765 | 4 | NR | 895 | 0 | NR |
| 380 | 0 | NR | 510 | 171 | NR | 640 | 184 | NR | 770 | 3 | NR | 900 | 0 | NR |
| 385 | 1 | NR | 515 | 175 | NR | 645 | 198 | NR | 775 | 3 | NR | 905 | 0 | NR |
| 390 | 1 | NR | 520 | 178 | NR | 650 | 156 | NR | 780 | 2 | NR | 910 | 0 | NR |
| 395 | 2 | NR | 525 | 182 | NR | 655 | 131 | NR | 785 | 2 | NR | 915 | 0 | NR |
| 400 | 3 | NR | 530 | 185 | NR | 660 | 110 | NR | 790 | 2 | NR | 920 | 0 | NR |
| 405 | 3 | NR | 535 | 189 | NR | 665 | 93 | NR | 795 | 2 | NR | 925 | 0 | NR |
| 410 | 5 | NR | 540 | 194 | NR | 670 | 85 | NR | 800 | 1 | NR | 930 | 0 | NR |
| 415 | 8 | NR | 545 | 201 | NR | 675 | 70 | NR | 805 | 1 | NR | 935 | 0 | NR |
| 420 | 13 | NR | 550 | 209 | NR | 680 | 60 | NR | 810 | 1 | NR | 940 | 0 | NR |
| 425 | 23 | NR | 555 | 216 | NR | 685 | 51 | NR | 815 | 1 | NR | 945 | 0 | NR |
| 430 | 40 | NR | 560 | 225 | NR | 690 | 44 | NR | 820 | 1 | NR | 950 | 0 | NR |
| 435 | 68 | NR | 565 | 234 | NR | 695 | 37 | NR | 825 | 1 | NR | 955 | 0 | NR |
| 440 | 114 | NR | 570 | 243 | NR | 700 | 32 | NR | 830 | 1 | NR | 960 | 0 | NR |
| 445 | 200 | NR | 575 | 251 | NR | 705 | 27 | NR | 835 | 1 | NR | 965 | 0 | NR |
| 450 | 260 | NR | 580 | 259 | NR | 710 | 23 | NR | 840 | 0 | NR | 970 | 0 | NR |
| 455 | 194 | NR | 585 | 266 | NR | 715 | 19 | NR | 845 | 0 | NR | 975 | 0 | NR |
| 460 | 155 | NR | 590 | 271 | NR | 720 | 17 | NR | 850 | 0 | NR | 980 | 0 | NR |
| 465 | 182 | NR | 595 | 273 | NR | 725 | 14 | NR | 855 | 0 | NR | 985 | 0 | NR |
| 470 | 226 | NR | 600 | 276 | NR | 730 | 12 | NR | 860 | 0 | NR | 990 | 0 | NR |
| 475 | 241 | NR | 605 | 279 | NR | 735 | 10 | NR | 865 | 0 | NR | 995 | 0 | NR |
| 480 | 211 | NR | 610 | 307 | NR | 740 | 9 | NR | 870 | 0 | NR | 1000 | 0 | NR |
| 485 | 177 | NR | 615 | 311 | NR | 745 | 7 | NR | 875 | 0 | NR | | | |

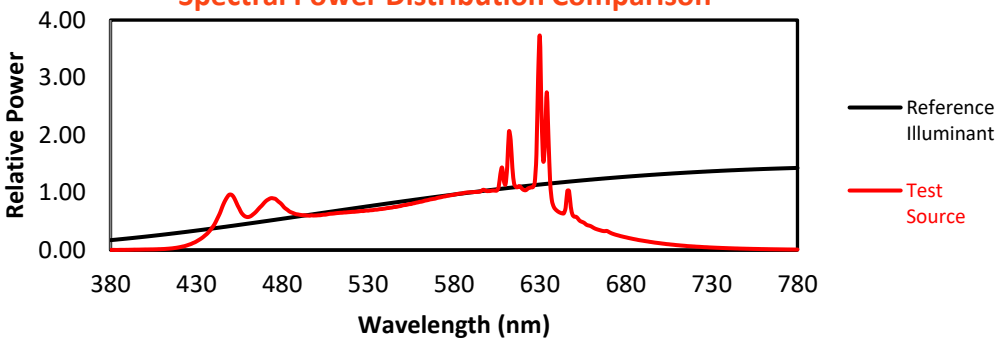
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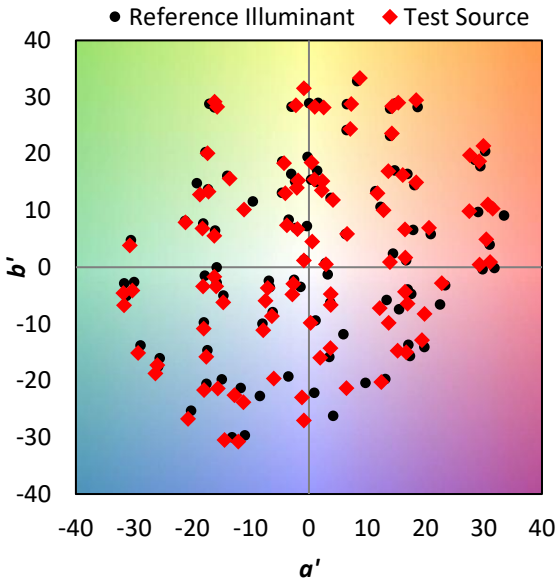
## Summary

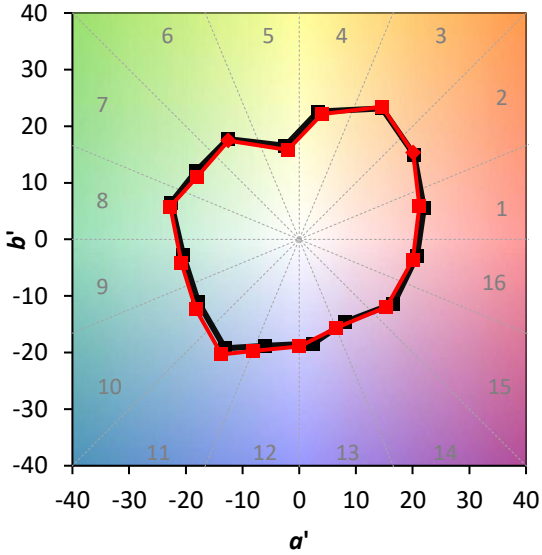
$R_f$ = 90.9
$R_g$ = 99.5
CIE $R_a$ = 90.6
$R_9$ = 86.5

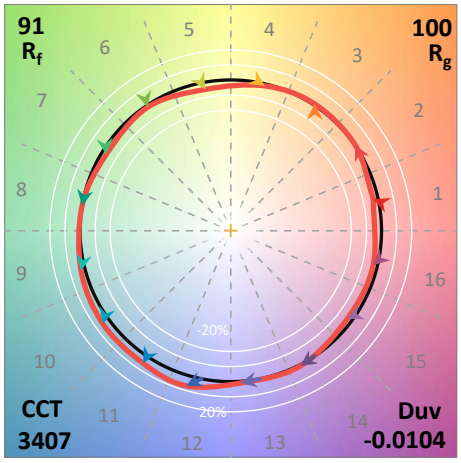
## Spectral Power Distribution Comparison

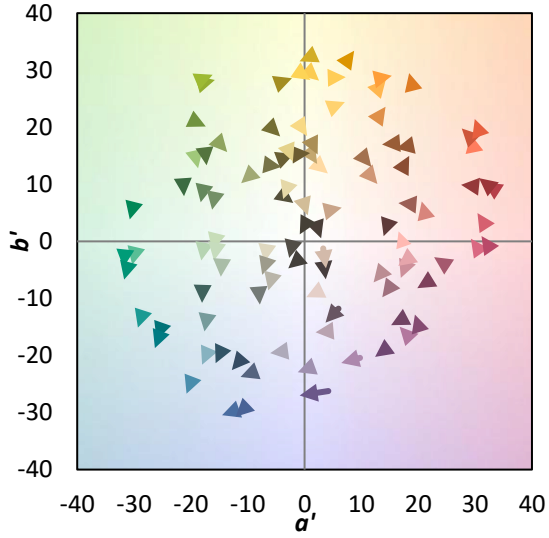



## Color Vector Graphics



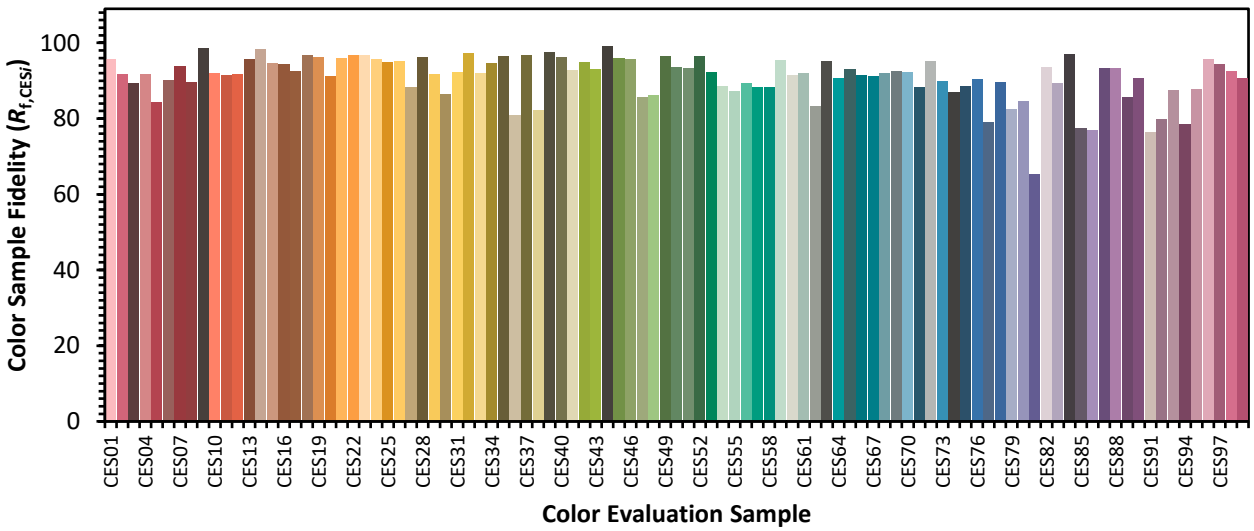



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**Individual Sample Fidelity Index ($R_{f,i}$)**

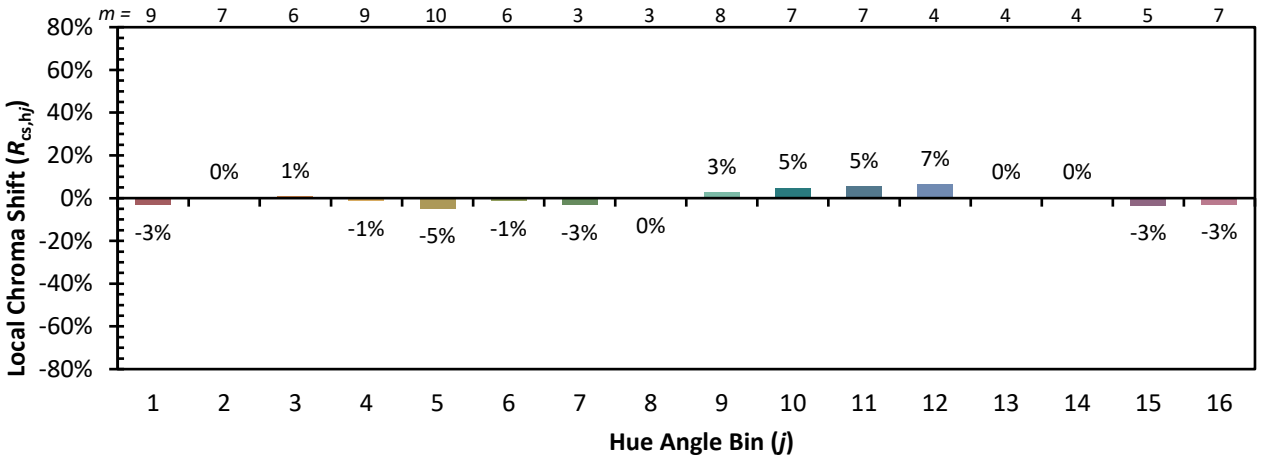
| | | | |
|---|---|---|---|
| CES01 = 86 | CES26 = 95 | CES51 = 93 | CES76 = 90 |
| CES02 = 63 | CES27 = 88 | CES52 = 97 | CES77 = 79 |
| CES03 = 32 | CES28 = 96 | CES53 = 92 | CES78 = 90 |
| CES04 = 70 | CES29 = 92 | CES54 = 89 | CES79 = 82 |
| CES05 = 50 | CES30 = 87 | CES55 = 87 | CES80 = 85 |
| CES06 = 51 | CES31 = 92 | CES56 = 89 | CES81 = 65 |
| CES07 = 43 | CES32 = 97 | CES57 = 88 | CES82 = 94 |
| CES08 = 42 | CES33 = 92 | CES58 = 88 | CES83 = 89 |
| CES09 = 29 | CES34 = 95 | CES59 = 95 | CES84 = 97 |
| CES10 = 76 | CES35 = 96 | CES60 = 91 | CES85 = 78 |
| CES11 = 58 | CES36 = 81 | CES61 = 92 | CES86 = 77 |
| CES12 = 65 | CES37 = 97 | CES62 = 83 | CES87 = 93 |
| CES13 = 44 | CES38 = 82 | CES63 = 95 | CES88 = 93 |
| CES14 = 74 | CES39 = 98 | CES64 = 91 | CES89 = 86 |
| CES15 = 72 | CES40 = 96 | CES65 = 93 | CES90 = 91 |
| CES16 = 48 | CES41 = 93 | CES66 = 91 | CES91 = 76 |
| CES17 = 49 | CES42 = 95 | CES67 = 91 | CES92 = 80 |
| CES18 = 57 | CES43 = 93 | CES68 = 92 | CES93 = 88 |
| CES19 = 71 | CES44 = 99 | CES69 = 93 | CES94 = 79 |
| CES20 = 67 | CES45 = 96 | CES70 = 92 | CES95 = 88 |
| CES21 = 86 | CES46 = 96 | CES71 = 88 | CES96 = 96 |
| CES22 = 78 | CES47 = 86 | CES72 = 95 | CES97 = 94 |
| CES23 = 91 | CES48 = 86 | CES73 = 90 | CES98 = 92 |
| CES24 = 90 | CES49 = 97 | CES74 = 87 | CES99 = 91 |
| CES25 = 71 | CES50 = 94 | CES75 = 89 | |

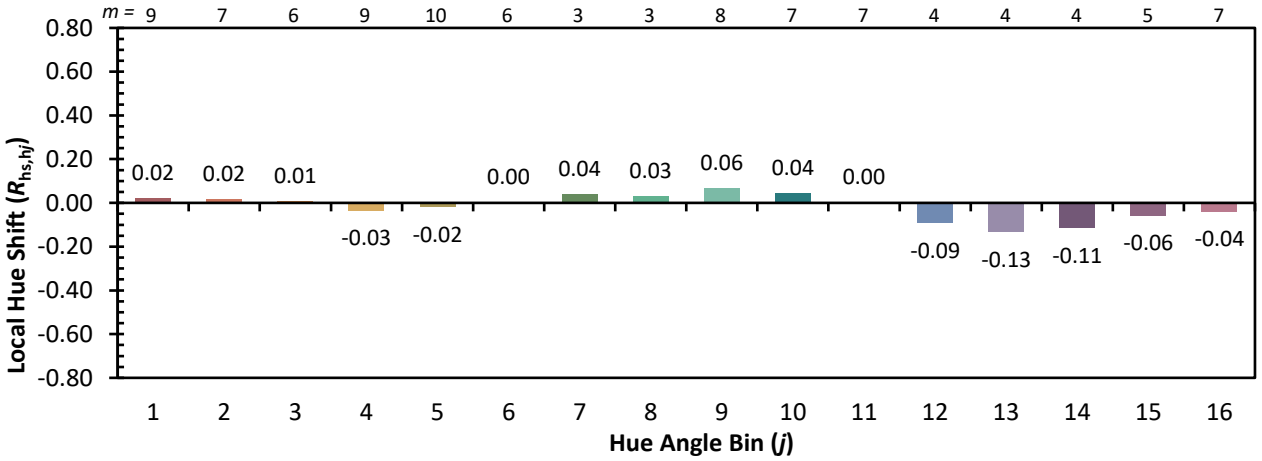


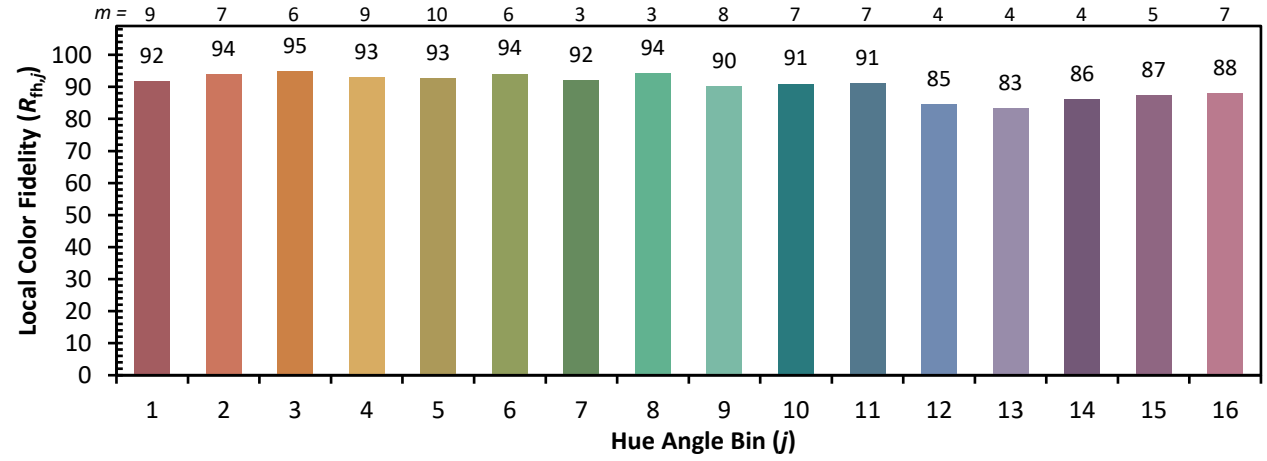
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## Color Rendition by Hue-Angle Bin



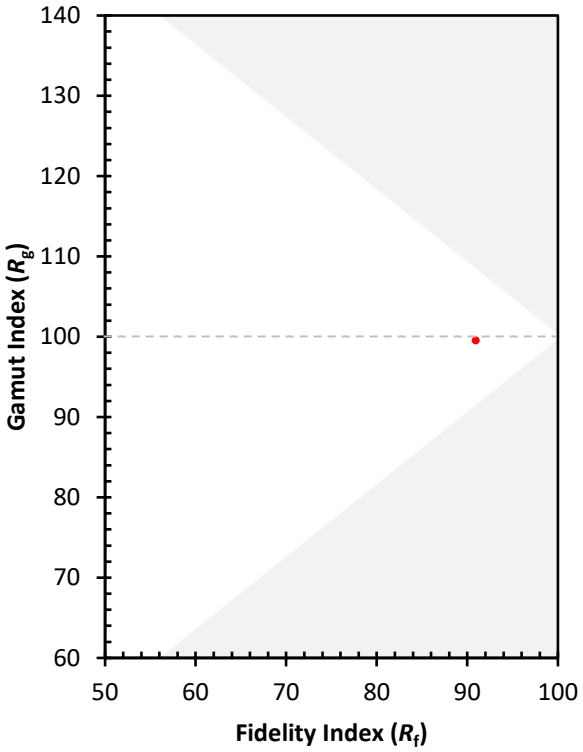



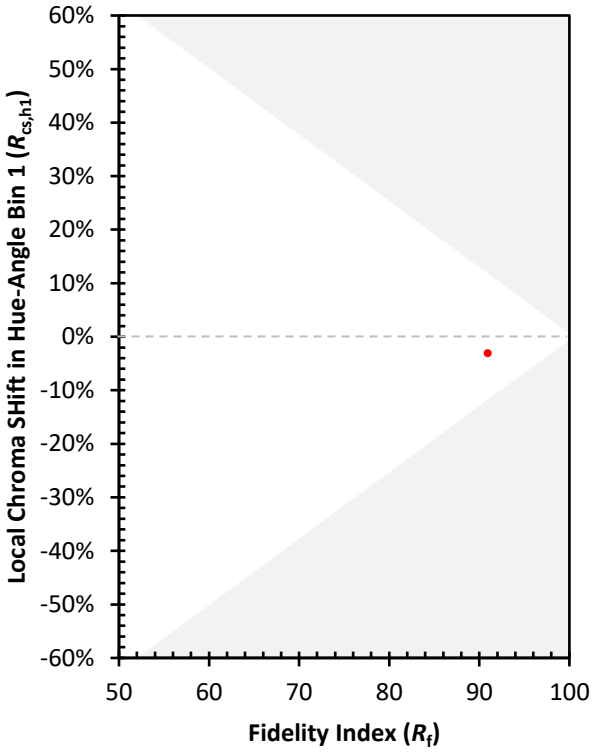



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## Measure Comparisons




(END OF REPORT)