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: P1590661

Luminaire Tested: 22CGTX-50-B40-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: | P1590661 |
| | TEST IS SCALED FROM IESNA LM-79-24 TEST DATA (G3-2510-581-27) |
| Test Lab: | COOPER LIGHTING SOLUTIONS |
| Issue Date: | 9/4/2026 |
| Manufacturer: | COOPER LIGHTING SOLUTIONS |
| Product Line: | METALUX |
| Catalog Number: | 22CGTX-50-B40-HCD |
| Description: | 2X2 5000 LUMEN CGTX TROFFER WITH BIO UP LEDS AT 4000K CCT WITH FROSTED SMOOTH LENS |
| Light Source: | 4000K CCT, 80 CRI LEDS |
| Ballast/Driver: | - |

**Summary**

| | |
|---|---|
| Lumens per Lamp: | N/A |
| Luminaire Lumens: | 4996.8 lumens |
| Efficiency: | N/A |
| Efficacy: | 100.1 lumens/watt |
| Spacing Criteria (0/90/45): | 1.28 / 1.27 / 1.39 |
| Luminous Opening: | Rectangular (W 2' x L: 2' x H: 0') |
| CIE Type: | Direct |
| Input Watts (W): | 49.9 |
| 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 |

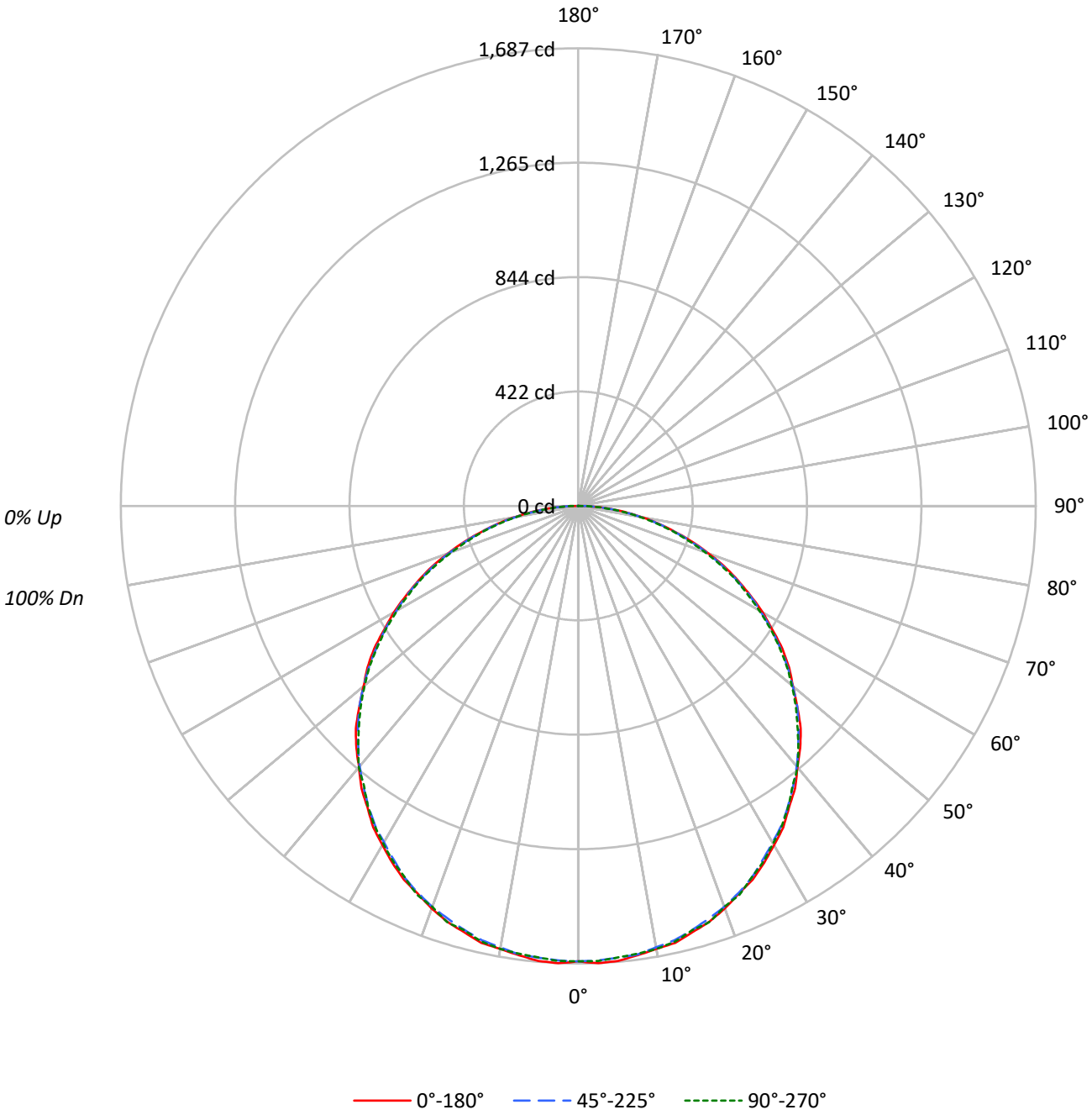


Cooper Lighting Solutions Photometric Lab
1121 Highway 74 South
Peachtree City, GA 30269

Scaled Data Report

TEST NUMBER: P1590661
CATALOG NUMBER: 22CGTX-50-B40-HCD

## Luminous Intensity Polar Plot



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

Scaled Data Report

TEST NUMBER: P1590661
CATALOG NUMBER: 22CGTX-50-B40-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 | 42 | 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 | 36 | 29 | 25 | 23 |

## AVERAGE LUMINANCE (cd/sqm):

| | 0° | 45° | 90° |
|---|---|---|---|
| 0° | 4518 | 4518 | 4518 |
| 5° | 4548 | 4516 | 4514 |
| 10° | 4531 | 4516 | 4531 |
| 15° | 4533 | 4510 | 4513 |
| 20° | 4523 | 4505 | 4505 |
| 25° | 4514 | 4492 | 4490 |
| 30° | 4486 | 4452 | 4466 |
| 35° | 4452 | 4434 | 4440 |
| 40° | 4417 | 4404 | 4421 |
| 45° | 4414 | 4369 | 4348 |
| 50° | 4325 | 4321 | 4302 |
| 55° | 4311 | 4256 | 4238 |
| 60° | 4229 | 4175 | 4145 |
| 65° | 4131 | 4096 | 4062 |
| 70° | 4013 | 3970 | 3899 |
| 75° | 3833 | 3795 | 3738 |
| 80° | 3662 | 3592 | 3521 |
| 85° | 3325 | 3239 | 3183 |

## MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°
Vertical Angle: 45°
Luminance: 4414 cd/sqm

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

Scaled Data Report

TEST NUMBER: P1590661
CATALOG NUMBER: 22CGTX-50-B40-HCD

**ZONAL LUMENS:**

| Zone | Lumens | % Fixture |
|---|---|---|
| 0°-10° | 159.3 | 3.2 |
| 10°-20° | 457.9 | 9.2 |
| 20°-30° | 696.7 | 13.9 |
| 30°-40° | 845.0 | 16.9 |
| 40°-50° | 885.4 | 17.7 |
| 50°-60° | 811.0 | 16.2 |
| 60°-70° | 635.1 | 12.7 |
| 70°-80° | 386.5 | 7.7 |
| 80°-90° | 120.0 | 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° | 1313.9 | 26.3 |
| 0°-40° | 2158.8 | 43.2 |
| 0°-60° | 3855.3 | 77.2 |
| 0°-90° | 4996.8 | 100.0 |
| 90°-120° | 0.0 | 0.0 |
| 90°-150° | 0.0 | 0.0 |
| 90°-180° | 0.0 | 0.0 |
| 0°-180° | 4996.8 | 100.0 |

**CANDELA DISTRIBUTION:**

| | 0° | 22.5° | 45° | 67.5° | 90° | Flux |
|---|---|---|---|---|---|---|
| 0° | 1679 | 1679 | 1679 | 1679 | 1679 | |
| 5° | 1684 | 1678 | 1672 | 1672 | 1671 | 160 |
| 15° | 1627 | 1623 | 1619 | 1622 | 1620 | 460 |
| 25° | 1520 | 1510 | 1513 | 1511 | 1512 | 700 |
| 35° | 1355 | 1351 | 1350 | 1349 | 1352 | 850 |
| 45° | 1160 | 1147 | 1148 | 1147 | 1142 | 890 |
| 55° | 919 | 911 | 907 | 905 | 903 | 818 |
| 65° | 649 | 644 | 643 | 636 | 638 | 642 |
| 75° | 369 | 368 | 365 | 360 | 360 | 393 |
| 85° | 108 | 109 | 105 | 104 | 103 | 122 |
| 90° | 0 | 0 | 0 | 0 | 0 | |

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

Scaled Data Report

TEST NUMBER: P1590661
CATALOG NUMBER: 22CGTX-50-B40-HCD

**CANDELA DISTRIBUTION (FULL):**

| | 0° | 22.5° | 45° | 67.5° | 90° |
|---|---|---|---|---|---|
| 0° | *1679.1* | 1679.1 | 1679.1 | 1679.1 | 1679.1 |
| 2.5° | *1687.3* | *1682.7* | *1677.2* | *1674.5* | *1679.1* |
| 5° | *1683.6* | 1678.2 | 1671.8 | 1671.8 | 1670.9 |
| 7.5° | *1670.9* | 1671.8 | 1668.1 | 1663.6 | 1665.4 |
| 10° | *1658.1* | 1658.1 | 1652.6 | 1653.5 | 1658.1 |
| 12.5° | *1649.9* | 1641.7 | 1639.8 | 1638.0 | 1645.3 |
| 15° | *1627.1* | 1623.4 | 1618.8 | 1621.6 | 1619.8 |
| 17.5° | *1607.0* | 1600.6 | 1596.0 | 1596.0 | 1608.8 |
| 20° | *1579.6* | 1572.3 | 1573.2 | 1568.7 | 1573.2 |
| 22.5° | *1546.8* | 1544.0 | 1544.0 | 1543.1 | 1552.2 |
| 25° | *1520.3* | 1510.3 | 1513.0 | 1511.2 | 1512.1 |
| 27.5° | *1483.8* | 1476.5 | 1471.9 | 1471.9 | 1478.3 |
| 30° | *1443.6* | 1437.2 | 1432.7 | 1431.8 | 1437.2 |
| 32.5° | *1406.2* | 1392.5 | 1395.3 | 1394.4 | 1398.0 |
| 35° | *1355.1* | 1350.6 | 1349.6 | 1348.7 | 1351.5 |
| 37.5° | *1313.1* | 1304.0 | 1301.3 | 1300.4 | 1298.5 |
| 40° | *1257.5* | 1255.7 | 1253.8 | 1250.2 | 1258.4 |
| 42.5° | *1210.9* | 1203.6 | 1200.9 | 1201.8 | 1200.9 |
| 45° | *1159.8* | 1147.1 | 1148.0 | 1147.1 | 1142.5 |
| 47.5° | *1095.0* | 1091.4 | 1095.0 | 1087.7 | 1086.8 |
| 50° | *1033.0* | 1033.0 | 1032.1 | 1027.5 | 1027.5 |
| 52.5° | *980.1* | 971.9 | 971.9 | 966.4 | 968.2 |
| 55° | *918.9* | 910.7 | 907.1 | 905.2 | 903.4 |
| 57.5° | *847.7* | 844.1 | 842.3 | 839.5 | 838.6 |
| 60° | *785.7* | 781.1 | 775.7 | 773.8 | 770.2 |
| 62.5° | *715.4* | 713.6 | 710.9 | 708.1 | 702.7 |
| 65° | *648.8* | 644.3 | 643.3 | 636.0 | 637.9 |
| 67.5° | *582.2* | 577.6 | 574.0 | 570.3 | 565.8 |
| 70° | *510.1* | 506.5 | 504.6 | 499.2 | 495.5 |
| 72.5° | *442.6* | 438.9 | 435.3 | 428.9 | 425.2 |
| 75° | *368.7* | 367.8 | 365.0 | 360.5 | 359.5 |
| 77.5° | *304.8* | 302.1 | 299.3 | 295.7 | 292.0 |
| 80° | *236.3* | 235.4 | 231.8 | 230.0 | 227.2 |
| 82.5° | *173.4* | 170.6 | 167.0 | 165.2 | 163.3 |
| 85° | *107.7* | 108.6 | 104.9 | 104.0 | 103.1 |
| 87.5° | *50.2* | 50.2 | 52.0 | 52.9 | 50.2 |
| 90° | *0.0* | 0.0 | 0.0 | 0.0 | 0.0 |

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

TEST NUMBER: P1590661
CATALOG NUMBER: 22CGTX-50-B40-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 | 17.23 | 18.90 | 17.60 | 19.21 | 19.52 | 17.19 | 18.85 | 17.55 | 19.16 | 19.48 |
| | 3H | 19.19 | 20.70 | 19.56 | 21.02 | 21.38 | 19.10 | 20.60 | 19.47 | 20.93 | 21.29 |
| | 4H | 19.95 | 21.37 | 20.35 | 21.72 | 22.09 | 19.84 | 21.26 | 20.24 | 21.61 | 21.98 |
| | 6H | 20.56 | 21.88 | 20.97 | 22.24 | 22.63 | 20.42 | 21.74 | 20.83 | 22.11 | 22.50 |
| | 8H | 20.77 | 22.04 | 21.20 | 22.42 | 22.82 | 20.62 | 21.89 | 21.05 | 22.27 | 22.67 |
| | 12H | 20.92 | 22.14 | 21.35 | 22.52 | 22.95 | 20.77 | 21.98 | 21.19 | 22.36 | 22.79 |
| 4H | 2H | 17.90 | 19.33 | 18.30 | 19.67 | 20.05 | 17.87 | 19.29 | 18.26 | 19.64 | 20.01 |
| | 3H | 20.08 | 21.28 | 20.49 | 21.68 | 22.08 | 20.00 | 21.20 | 20.41 | 21.60 | 22.00 |
| | 4H | 20.98 | 22.07 | 21.41 | 22.48 | 22.91 | 20.88 | 21.97 | 21.31 | 22.38 | 22.81 |
| | 6H | 21.73 | 22.68 | 22.18 | 23.12 | 23.58 | 21.60 | 22.56 | 22.06 | 23.00 | 23.45 |
| | 8H | 22.00 | 22.89 | 22.46 | 23.34 | 23.80 | 21.86 | 22.75 | 22.32 | 23.19 | 23.66 |
| | 12H | 22.21 | 23.01 | 22.69 | 23.49 | 23.95 | 22.06 | 22.86 | 22.53 | 23.33 | 23.80 |
| 8H | 4H | 21.33 | 22.23 | 21.79 | 22.67 | 23.13 | 21.25 | 22.14 | 21.71 | 22.58 | 23.04 |
| | 6H | 22.22 | 22.97 | 22.71 | 23.45 | 23.93 | 22.11 | 22.85 | 22.60 | 23.34 | 23.82 |
| | 8H | 22.58 | 23.25 | 23.09 | 23.75 | 24.24 | 22.45 | 23.12 | 22.96 | 23.62 | 24.11 |
| | 12H | 22.88 | 23.47 | 23.38 | 23.96 | 24.52 | 22.73 | 23.32 | 23.24 | 23.81 | 24.37 |
| 12H | 4H | 21.38 | 22.18 | 21.86 | 22.66 | 23.13 | 21.30 | 22.10 | 21.78 | 22.58 | 23.04 |
| | 6H | 22.30 | 22.97 | 22.80 | 23.47 | 23.96 | 22.19 | 22.86 | 22.70 | 23.36 | 23.85 |
| | 8H | 22.72 | 23.31 | 23.23 | 23.80 | 24.36 | 22.60 | 23.19 | 23.10 | 23.68 | 24.24 |

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: SP1-2510-581-3-R2

Test Date: 01/21/2026

Luminaire Tested: 24CGTX-55-B40-HCD

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

Report Generated By FNC07603 / LDUCLS01DT446
Version: v7.05

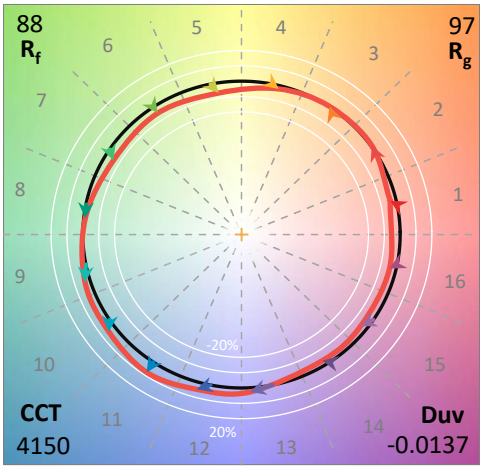
## Test Information

| | |
|---|---|
| Test Method: | LM-79-2019 |
| Report Number: | SP1-2510-581-3-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-B40-HCD** |
| Description: | *THIS IS A REVISION OF REPORT SP1-2510-581-3-R2 TO UPDATE THE CATALOG INFORMATION* 2X4 CGTX 5500 lumen with BioUp Boards with fixed CCT 4000K - Control Volatge at 4V |

## Spectral Parameters

| | |
|---|---|
| CCT (K): | 4150 |
| CIE u': | 0.2306 |
| CIE v': | 0.4822 |
| Duv: | -0.0137 |
| CIE x: | 0.3662 |
| CIE y: | 0.3403 |
| CIE z: | 0.2935 |
| Peak Wavelength (nm): | 630 |
| Dominant Wavelength (nm): | 595 |
| Purity: | 11.98102 |
| Rf: | 88 |
| Rg: | 97.3 |

| | |
|---|---|
| CRI (Ra): | 87.7 |
| R1: | 92.1 |
| R2: | 87.5 |
| R3: | 86.1 |
| R4: | 91.4 |
| R5: | 90.5 |
| R6: | 81.3 |
| R7: | 84.9 |
| R8: | 87.7 |
| R9: | 87.2 |
| R10: | 76.5 |
| R11: | 92.8 |
| R12: | 70.9 |
| R13: | 90.1 |
| R14: | 93.9 |
| R15: | 92.9 |




## Test Conditions

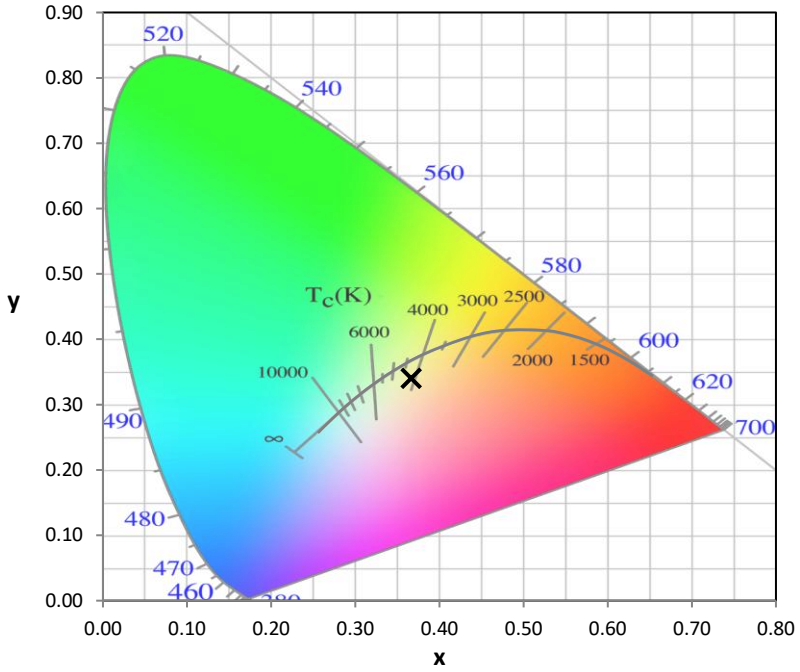
| | |
|---|---|
| Stabilization Time: | 20M |
| Operation Time: | 1H 20M |
| Sphere Temperature (°C): | 25.1 |

REPORT NUMBER: SP1-2510-581-3-R2

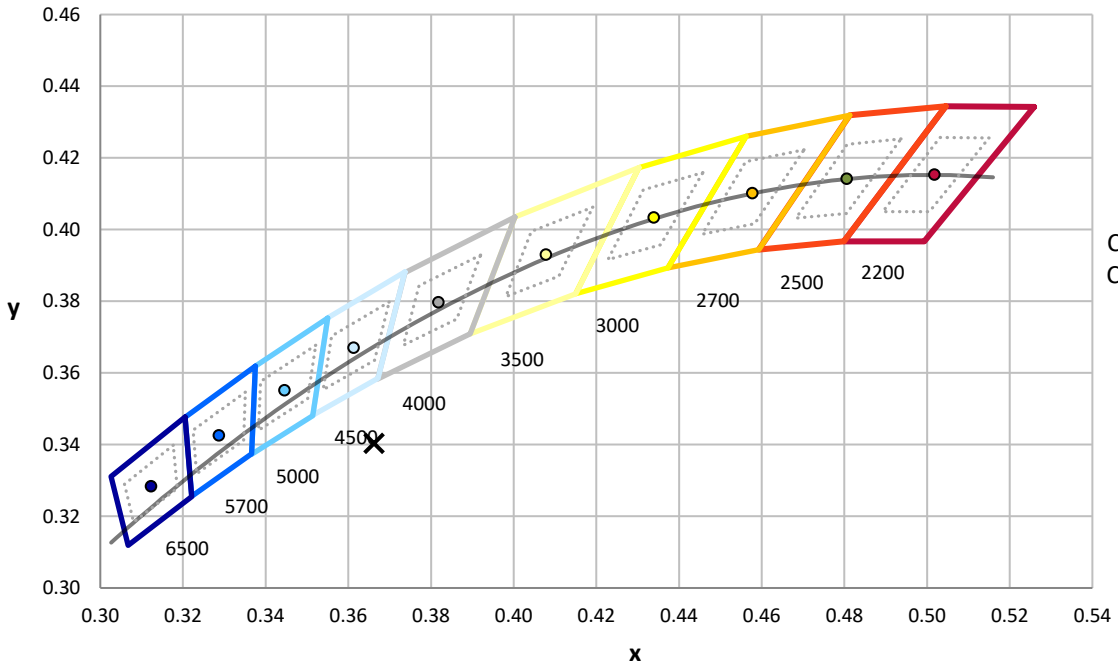
| Measurement and Test Equipment | | | |
|---|---|---|---|
| Instrument | Identification Number | Calibration Date | Calibration Due Date |
| Photometer | 76INCH SPHERE IN0058 | 12/16/2025 | 6/16/2026 |
| Power Meter | XITRON INXT2011004 | 10/21/2025 | 10/21/2026 |
| AC Power Source | CHROMA 61603 IN0063 | 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: SP1-2510-581-3-R2

## CIE 1931 Chromaticity Diagram




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

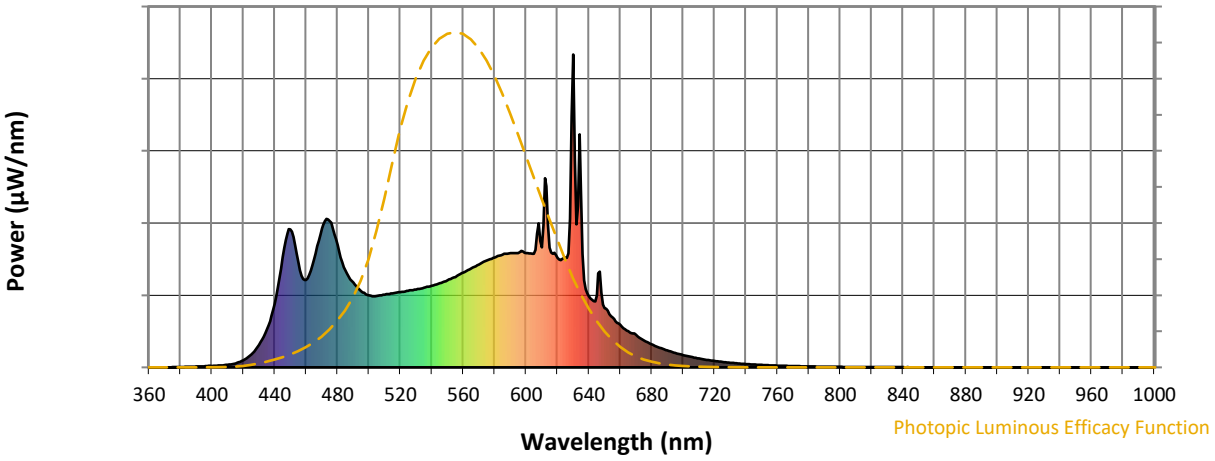



CCT = 4150K
CIE x = 0.3662
CIE y = 0.3403
Duv = -0.0137

Point lies outside the range

REPORT NUMBER: SP1-2510-581-3-R2

## Photopic Flux vs. Wavelength

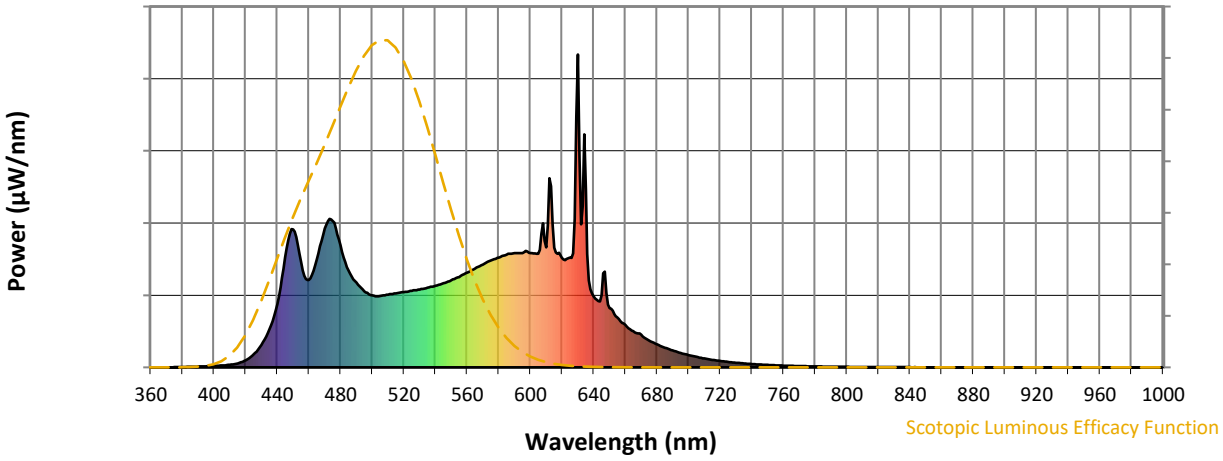



## Photopic Lumens: NR

| 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 | 271 | NR | 620 | 350 | NR | 750 | 8 | NR | 880 | 0 | NR |
| 365 | 0 | NR | 495 | 243 | NR | 625 | 351 | NR | 755 | 7 | NR | 885 | 0 | NR |
| 370 | 0 | NR | 500 | 230 | NR | 630 | 1000 | NR | 760 | 6 | NR | 890 | 0 | NR |
| 375 | 1 | NR | 505 | 228 | NR | 635 | 567 | NR | 765 | 5 | NR | 895 | 0 | NR |
| 380 | 1 | NR | 510 | 233 | NR | 640 | 228 | NR | 770 | 4 | NR | 900 | 0 | NR |
| 385 | 2 | NR | 515 | 236 | NR | 645 | 230 | NR | 775 | 3 | NR | 905 | 0 | NR |
| 390 | 3 | NR | 520 | 241 | NR | 650 | 189 | NR | 780 | 3 | NR | 910 | 0 | NR |
| 395 | 4 | NR | 525 | 244 | NR | 655 | 160 | NR | 785 | 3 | NR | 915 | 0 | NR |
| 400 | 5 | NR | 530 | 248 | NR | 660 | 136 | NR | 790 | 2 | NR | 920 | 0 | NR |
| 405 | 6 | NR | 535 | 255 | NR | 665 | 115 | NR | 795 | 2 | NR | 925 | 0 | NR |
| 410 | 8 | NR | 540 | 260 | NR | 670 | 104 | NR | 800 | 2 | NR | 930 | 0 | NR |
| 415 | 13 | NR | 545 | 269 | NR | 675 | 86 | NR | 805 | 1 | NR | 935 | 0 | NR |
| 420 | 23 | NR | 550 | 278 | NR | 680 | 74 | NR | 810 | 1 | NR | 940 | 0 | NR |
| 425 | 41 | NR | 555 | 289 | NR | 685 | 63 | NR | 815 | 1 | NR | 945 | 0 | NR |
| 430 | 71 | NR | 560 | 303 | NR | 690 | 54 | NR | 820 | 1 | NR | 950 | 0 | NR |
| 435 | 122 | NR | 565 | 316 | NR | 695 | 46 | NR | 825 | 1 | NR | 955 | 0 | NR |
| 440 | 203 | NR | 570 | 329 | NR | 700 | 39 | NR | 830 | 1 | NR | 960 | 0 | NR |
| 445 | 351 | NR | 575 | 341 | NR | 705 | 33 | NR | 835 | 1 | NR | 965 | 0 | NR |
| 450 | 441 | NR | 580 | 351 | NR | 710 | 28 | NR | 840 | 1 | NR | 970 | 0 | NR |
| 455 | 336 | NR | 585 | 360 | NR | 715 | 24 | NR | 845 | 1 | NR | 975 | 0 | NR |
| 460 | 280 | NR | 590 | 365 | NR | 720 | 20 | NR | 850 | 0 | NR | 980 | 0 | NR |
| 465 | 345 | NR | 595 | 365 | NR | 725 | 17 | NR | 855 | 0 | NR | 985 | 0 | NR |
| 470 | 444 | NR | 600 | 365 | NR | 730 | 15 | NR | 860 | 0 | NR | 990 | 0 | NR |
| 475 | 467 | NR | 605 | 364 | NR | 735 | 12 | NR | 865 | 0 | NR | 995 | 0 | NR |
| 480 | 390 | NR | 610 | 384 | NR | 740 | 11 | NR | 870 | 0 | NR | 1000 | 0 | NR |
| 485 | 310 | NR | 615 | 383 | NR | 745 | 9 | NR | 875 | 0 | NR | | | |

REPORT NUMBER: SP1-2510-581-3-R2

## Scotopic Flux vs. Wavelength

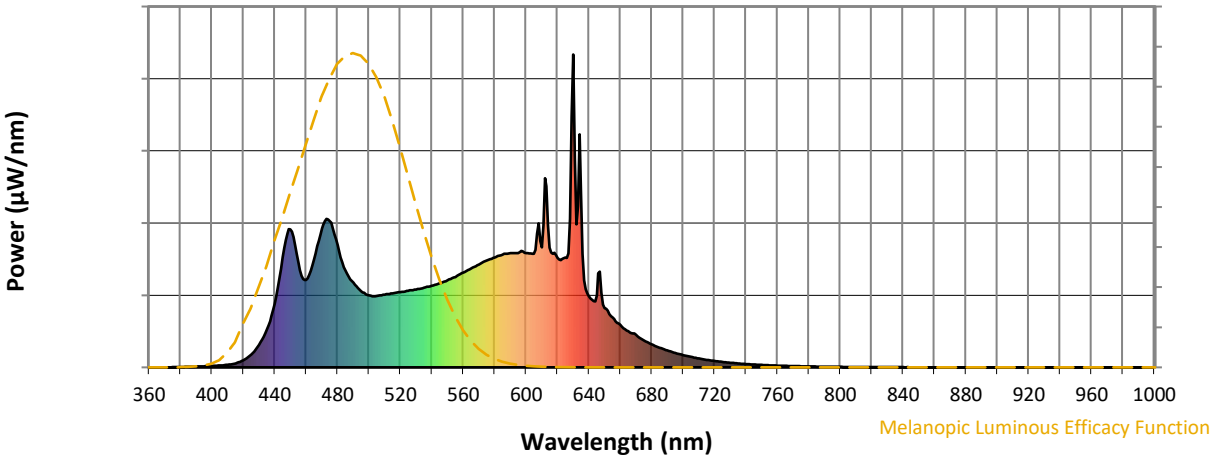



**Scotopic Lumens: NR** **S/P: 2.05**

| 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 | 271 | NR | 620 | 350 | NR | 750 | 8 | NR | 880 | 0 | NR |
| 365 | 0 | NR | 495 | 243 | NR | 625 | 351 | NR | 755 | 7 | NR | 885 | 0 | NR |
| 370 | 0 | NR | 500 | 230 | NR | 630 | 1000 | NR | 760 | 6 | NR | 890 | 0 | NR |
| 375 | 1 | NR | 505 | 228 | NR | 635 | 567 | NR | 765 | 5 | NR | 895 | 0 | NR |
| 380 | 1 | NR | 510 | 233 | NR | 640 | 228 | NR | 770 | 4 | NR | 900 | 0 | NR |
| 385 | 2 | NR | 515 | 236 | NR | 645 | 230 | NR | 775 | 3 | NR | 905 | 0 | NR |
| 390 | 3 | NR | 520 | 241 | NR | 650 | 189 | NR | 780 | 3 | NR | 910 | 0 | NR |
| 395 | 4 | NR | 525 | 244 | NR | 655 | 160 | NR | 785 | 3 | NR | 915 | 0 | NR |
| 400 | 5 | NR | 530 | 248 | NR | 660 | 136 | NR | 790 | 2 | NR | 920 | 0 | NR |
| 405 | 6 | NR | 535 | 255 | NR | 665 | 115 | NR | 795 | 2 | NR | 925 | 0 | NR |
| 410 | 8 | NR | 540 | 260 | NR | 670 | 104 | NR | 800 | 2 | NR | 930 | 0 | NR |
| 415 | 13 | NR | 545 | 269 | NR | 675 | 86 | NR | 805 | 1 | NR | 935 | 0 | NR |
| 420 | 23 | NR | 550 | 278 | NR | 680 | 74 | NR | 810 | 1 | NR | 940 | 0 | NR |
| 425 | 41 | NR | 555 | 289 | NR | 685 | 63 | NR | 815 | 1 | NR | 945 | 0 | NR |
| 430 | 71 | NR | 560 | 303 | NR | 690 | 54 | NR | 820 | 1 | NR | 950 | 0 | NR |
| 435 | 122 | NR | 565 | 316 | NR | 695 | 46 | NR | 825 | 1 | NR | 955 | 0 | NR |
| 440 | 203 | NR | 570 | 329 | NR | 700 | 39 | NR | 830 | 1 | NR | 960 | 0 | NR |
| 445 | 351 | NR | 575 | 341 | NR | 705 | 33 | NR | 835 | 1 | NR | 965 | 0 | NR |
| 450 | 441 | NR | 580 | 351 | NR | 710 | 28 | NR | 840 | 1 | NR | 970 | 0 | NR |
| 455 | 336 | NR | 585 | 360 | NR | 715 | 24 | NR | 845 | 1 | NR | 975 | 0 | NR |
| 460 | 280 | NR | 590 | 365 | NR | 720 | 20 | NR | 850 | 0 | NR | 980 | 0 | NR |
| 465 | 345 | NR | 595 | 365 | NR | 725 | 17 | NR | 855 | 0 | NR | 985 | 0 | NR |
| 470 | 444 | NR | 600 | 365 | NR | 730 | 15 | NR | 860 | 0 | NR | 990 | 0 | NR |
| 475 | 467 | NR | 605 | 364 | NR | 735 | 12 | NR | 865 | 0 | NR | 995 | 0 | NR |
| 480 | 390 | NR | 610 | 384 | NR | 740 | 11 | NR | 870 | 0 | NR | 1000 | 0 | NR |
| 485 | 310 | NR | 615 | 383 | NR | 745 | 9 | NR | 875 | 0 | NR | | | |

REPORT NUMBER: SP1-2510-581-3-R2

## Melanopic Flux vs. Wavelength




**Melanopic Lumens: NR** **M/P: 4.67**

| 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 | 271 | NR | 620 | 350 | NR | 750 | 8 | NR | 880 | 0 | NR |
| 365 | 0 | NR | 495 | 243 | NR | 625 | 351 | NR | 755 | 7 | NR | 885 | 0 | NR |
| 370 | 0 | NR | 500 | 230 | NR | 630 | 1000 | NR | 760 | 6 | NR | 890 | 0 | NR |
| 375 | 1 | NR | 505 | 228 | NR | 635 | 567 | NR | 765 | 5 | NR | 895 | 0 | NR |
| 380 | 1 | NR | 510 | 233 | NR | 640 | 228 | NR | 770 | 4 | NR | 900 | 0 | NR |
| 385 | 2 | NR | 515 | 236 | NR | 645 | 230 | NR | 775 | 3 | NR | 905 | 0 | NR |
| 390 | 3 | NR | 520 | 241 | NR | 650 | 189 | NR | 780 | 3 | NR | 910 | 0 | NR |
| 395 | 4 | NR | 525 | 244 | NR | 655 | 160 | NR | 785 | 3 | NR | 915 | 0 | NR |
| 400 | 5 | NR | 530 | 248 | NR | 660 | 136 | NR | 790 | 2 | NR | 920 | 0 | NR |
| 405 | 6 | NR | 535 | 255 | NR | 665 | 115 | NR | 795 | 2 | NR | 925 | 0 | NR |
| 410 | 8 | NR | 540 | 260 | NR | 670 | 104 | NR | 800 | 2 | NR | 930 | 0 | NR |
| 415 | 13 | NR | 545 | 269 | NR | 675 | 86 | NR | 805 | 1 | NR | 935 | 0 | NR |
| 420 | 23 | NR | 550 | 278 | NR | 680 | 74 | NR | 810 | 1 | NR | 940 | 0 | NR |
| 425 | 41 | NR | 555 | 289 | NR | 685 | 63 | NR | 815 | 1 | NR | 945 | 0 | NR |
| 430 | 71 | NR | 560 | 303 | NR | 690 | 54 | NR | 820 | 1 | NR | 950 | 0 | NR |
| 435 | 122 | NR | 565 | 316 | NR | 695 | 46 | NR | 825 | 1 | NR | 955 | 0 | NR |
| 440 | 203 | NR | 570 | 329 | NR | 700 | 39 | NR | 830 | 1 | NR | 960 | 0 | NR |
| 445 | 351 | NR | 575 | 341 | NR | 705 | 33 | NR | 835 | 1 | NR | 965 | 0 | NR |
| 450 | 441 | NR | 580 | 351 | NR | 710 | 28 | NR | 840 | 1 | NR | 970 | 0 | NR |
| 455 | 336 | NR | 585 | 360 | NR | 715 | 24 | NR | 845 | 1 | NR | 975 | 0 | NR |
| 460 | 280 | NR | 590 | 365 | NR | 720 | 20 | NR | 850 | 0 | NR | 980 | 0 | NR |
| 465 | 345 | NR | 595 | 365 | NR | 725 | 17 | NR | 855 | 0 | NR | 985 | 0 | NR |
| 470 | 444 | NR | 600 | 365 | NR | 730 | 15 | NR | 860 | 0 | NR | 990 | 0 | NR |
| 475 | 467 | NR | 605 | 364 | NR | 735 | 12 | NR | 865 | 0 | NR | 995 | 0 | NR |
| 480 | 390 | NR | 610 | 384 | NR | 740 | 11 | NR | 870 | 0 | NR | 1000 | 0 | NR |
| 485 | 310 | NR | 615 | 383 | NR | 745 | 9 | NR | 875 | 0 | NR | | | |

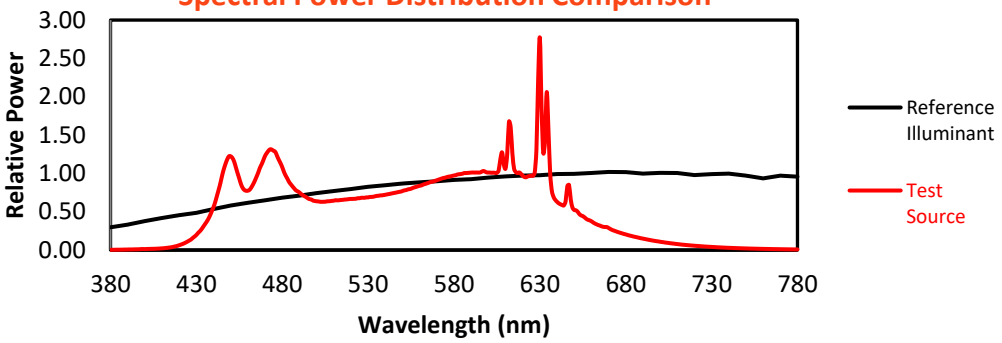
REPORT NUMBER: SP1-2510-581-3-R2

# TM-30-18

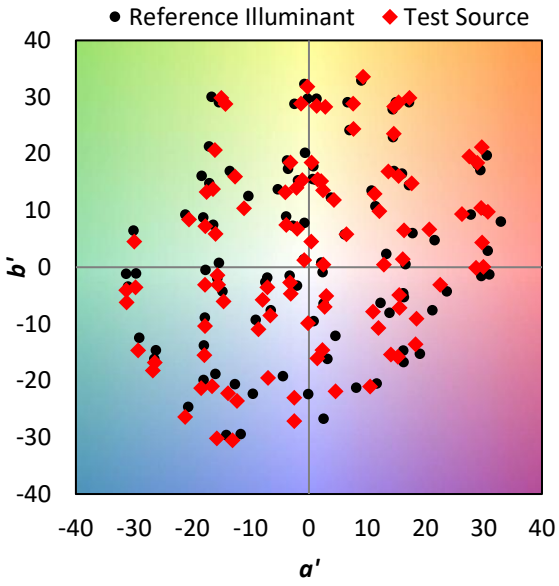
## Summary

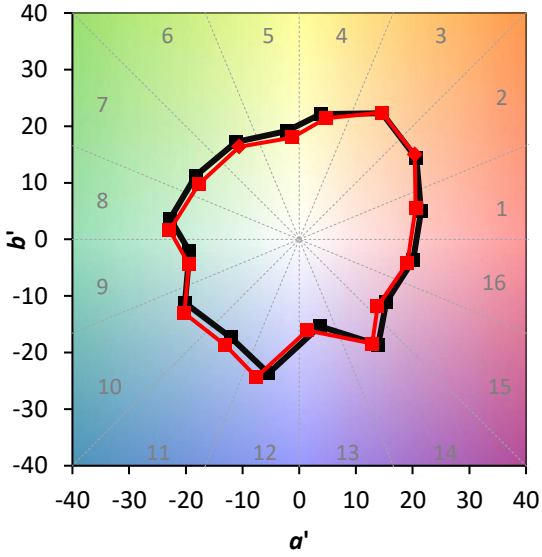
$R_f$ = 88
$R_g$ = 97.3
CIE $R_a$ = 87.7
$R_9$ = 87.2

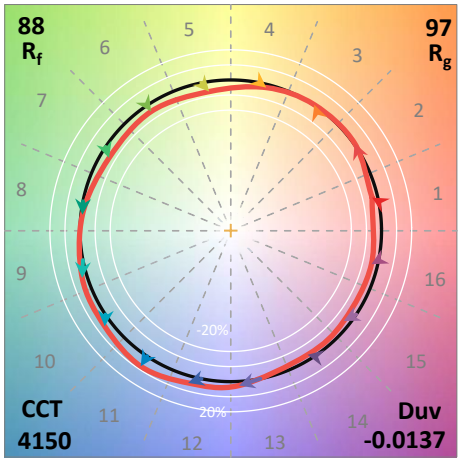
## Spectral Power Distribution Comparison

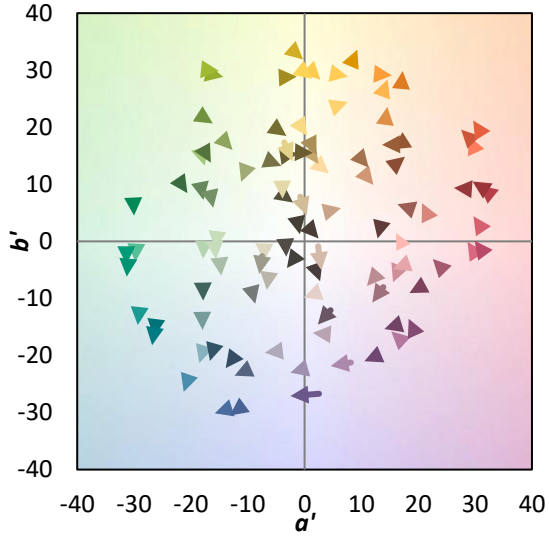



## Color Vector Graphics



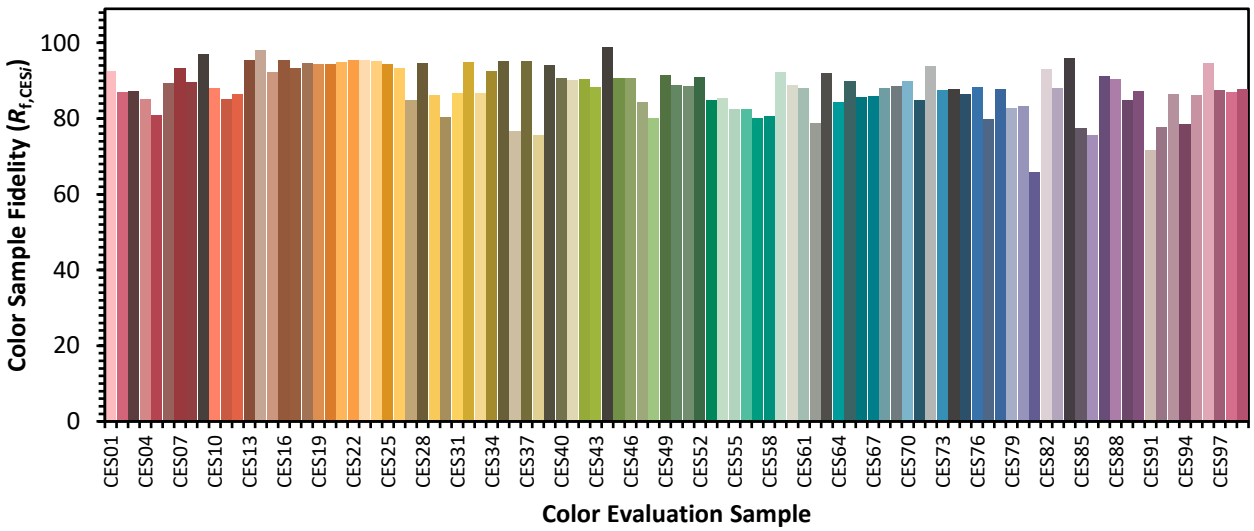



REPORT NUMBER: SP1-2510-581-3-R2

# TM-30-18

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

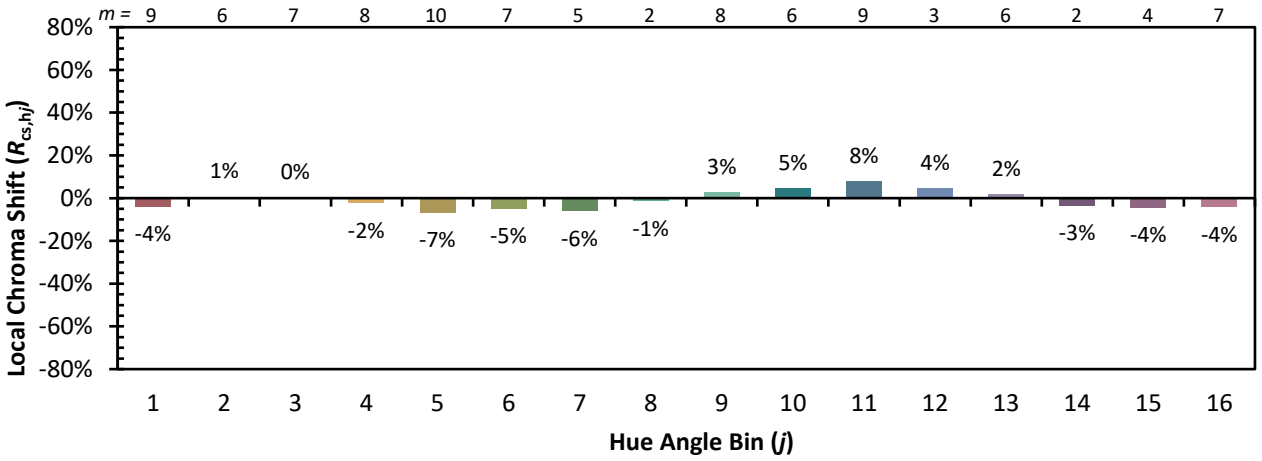
| | | | |
|---|---|---|---|
| CES01 = 86 | CES26 = 93 | CES51 = 88 | CES76 = 88 |
| CES02 = 62 | CES27 = 85 | CES52 = 91 | CES77 = 80 |
| CES03 = 31 | CES28 = 95 | CES53 = 85 | CES78 = 88 |
| CES04 = 70 | CES29 = 86 | CES54 = 85 | CES79 = 83 |
| CES05 = 49 | CES30 = 80 | CES55 = 83 | CES80 = 83 |
| CES06 = 51 | CES31 = 87 | CES56 = 83 | CES81 = 66 |
| CES07 = 42 | CES32 = 95 | CES57 = 80 | CES82 = 93 |
| CES08 = 41 | CES33 = 87 | CES58 = 81 | CES83 = 88 |
| CES09 = 29 | CES34 = 93 | CES59 = 92 | CES84 = 96 |
| CES10 = 75 | CES35 = 95 | CES60 = 89 | CES85 = 77 |
| CES11 = 58 | CES36 = 77 | CES61 = 88 | CES86 = 76 |
| CES12 = 64 | CES37 = 95 | CES62 = 79 | CES87 = 91 |
| CES13 = 43 | CES38 = 76 | CES63 = 92 | CES88 = 90 |
| CES14 = 74 | CES39 = 94 | CES64 = 84 | CES89 = 85 |
| CES15 = 71 | CES40 = 91 | CES65 = 90 | CES90 = 87 |
| CES16 = 47 | CES41 = 90 | CES66 = 86 | CES91 = 72 |
| CES17 = 49 | CES42 = 90 | CES67 = 86 | CES92 = 78 |
| CES18 = 56 | CES43 = 88 | CES68 = 88 | CES93 = 86 |
| CES19 = 71 | CES44 = 99 | CES69 = 89 | CES94 = 79 |
| CES20 = 66 | CES45 = 91 | CES70 = 90 | CES95 = 86 |
| CES21 = 85 | CES46 = 91 | CES71 = 85 | CES96 = 95 |
| CES22 = 78 | CES47 = 84 | CES72 = 94 | CES97 = 88 |
| CES23 = 91 | CES48 = 80 | CES73 = 87 | CES98 = 87 |
| CES24 = 90 | CES49 = 91 | CES74 = 88 | CES99 = 88 |
| CES25 = 71 | CES50 = 89 | CES75 = 87 | |

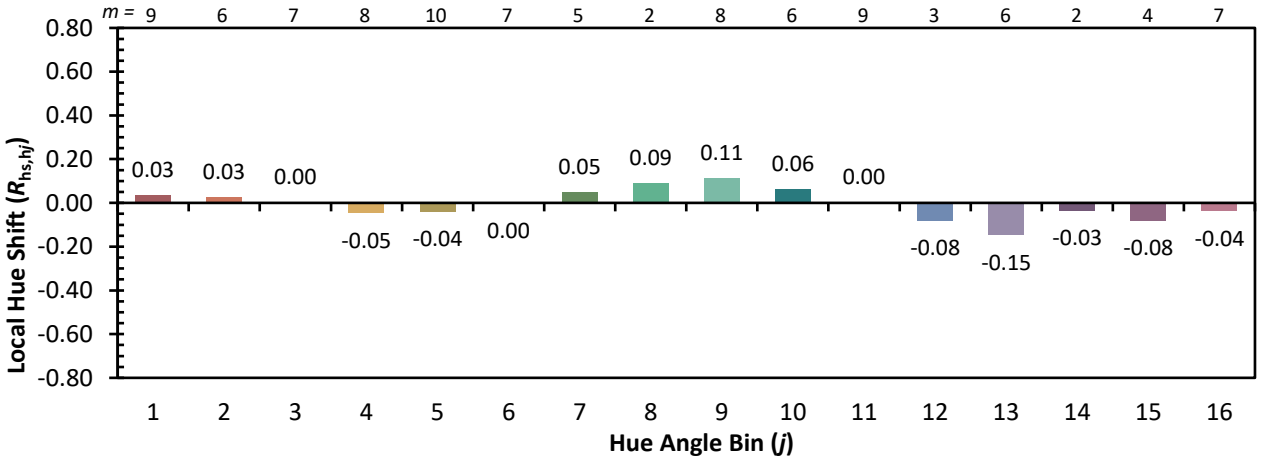


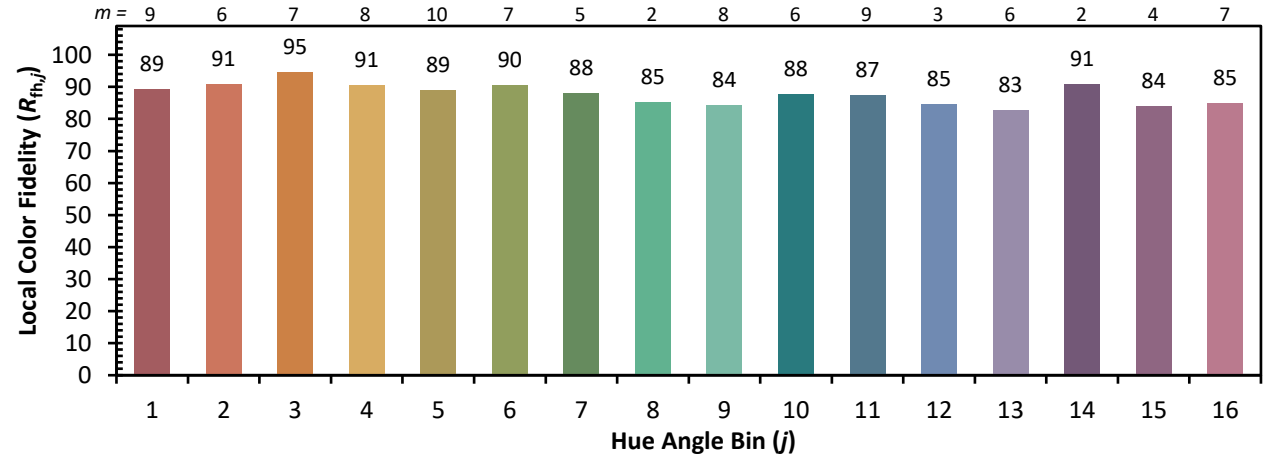
REPORT NUMBER: SP1-2510-581-3-R2

# TM-30-18

## Color Rendition by Hue-Angle Bin



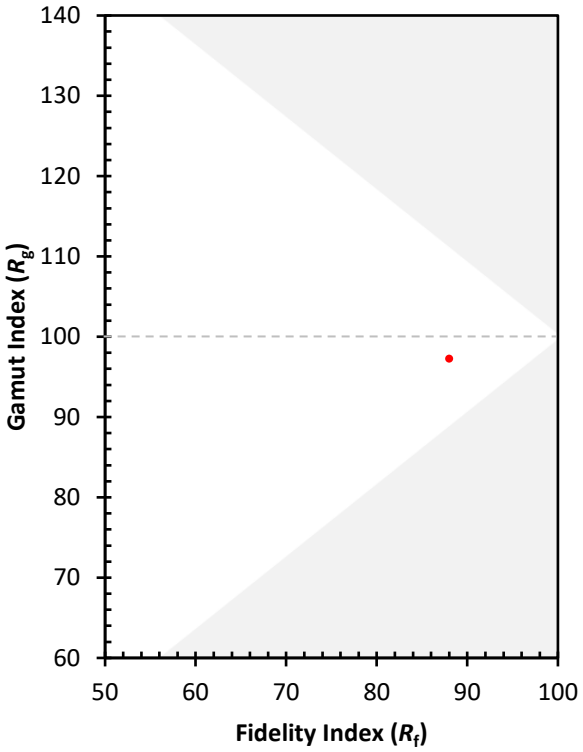



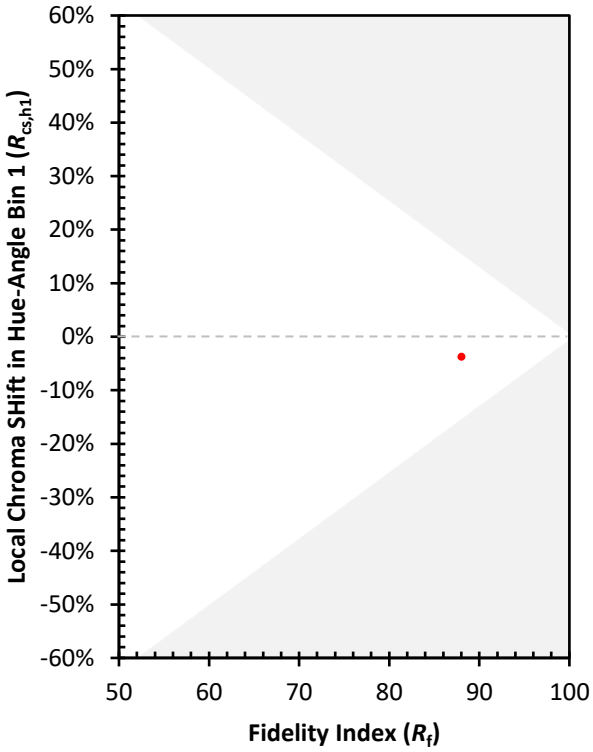



REPORT NUMBER: SP1-2510-581-3-R2

## TM-30-18

### Measure Comparisons




(END OF REPORT)