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: P1590935

Luminaire Tested: 24CGTX-20-L93050-W2A-5000K

Issue Date: 9/7/2026

Report Generated By 670265710 / DESKTOP-98SHLC4

Cooper Lighting Solutions Photometric Lab
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Peachtree City, GA 30269

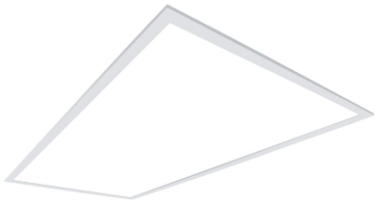
Scaled Data Report

**Test Information**

| | |
|---|---|
| Test Method: | LM-79-2019 |
| Report Number: | P1590935 |
| | TEST IS SCALED FROM IESNA LM-79-24 TEST DATA (G3-2512-631-14) |
| Test Lab: | COOPER LIGHTING SOLUTIONS |
| Issue Date: | 9/7/2026 |
| Manufacturer: | COOPER LIGHTING SOLUTIONS |
| Product Line: | METALUX |
| Catalog Number: | 24CGTX-20-L93050-W2A-5000K |
| Description: | 2X4 2000 LUMEN CGTX TROFFER WITH VividTune LEDS AT 5000K CCT |
| Light Source: | 5000K CCT, 90 CRI LEDS |
| Ballast/Driver: | - |

**Summary**

| | |
|---|---|
| Lumens per Lamp: | N/A |
| Luminaire Lumens: | 2269.5 lumens |
| Efficiency: | N/A |
| Efficacy: | 125.4 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): | 18.1 |
| 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 |

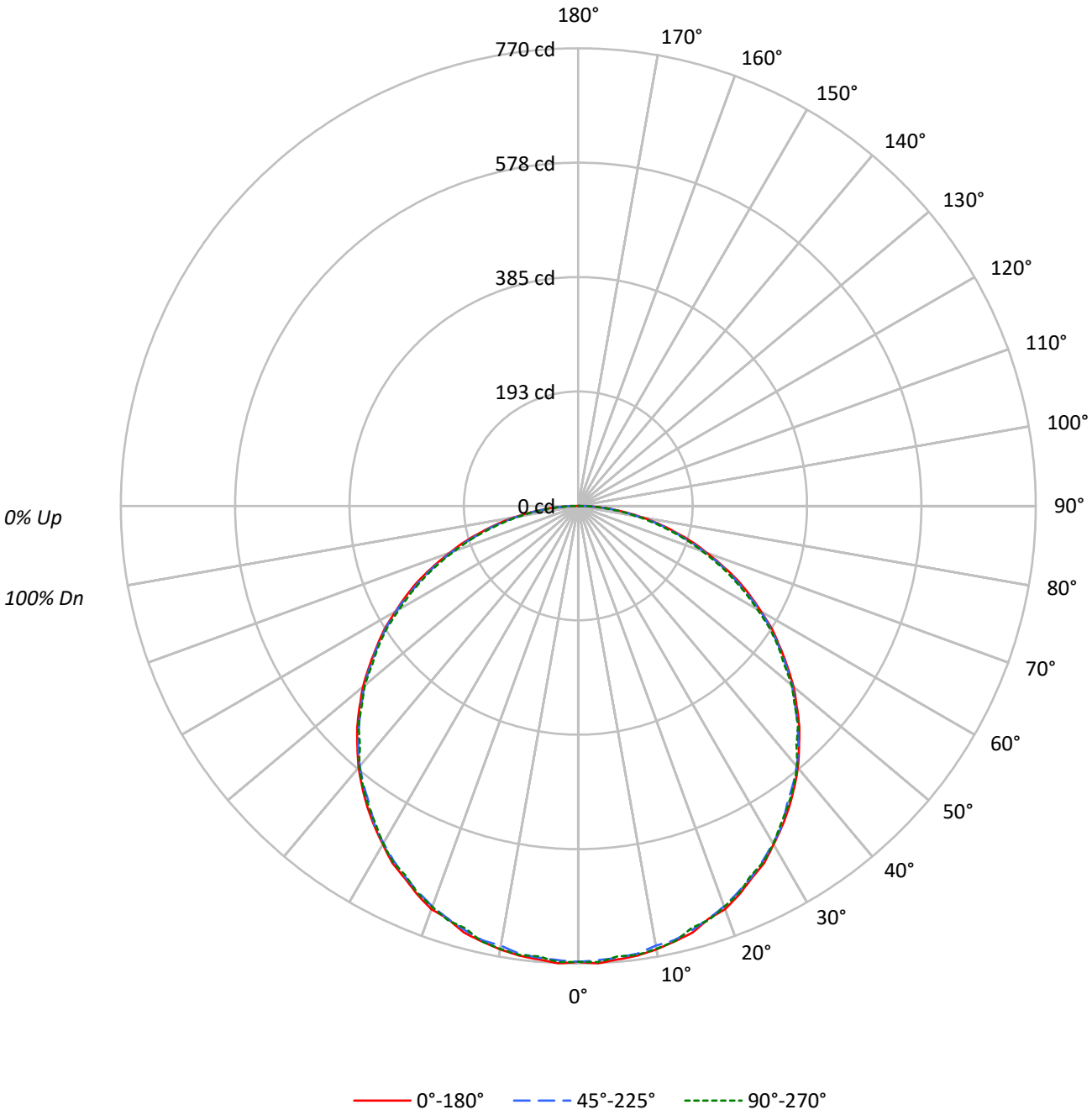


Cooper Lighting Solutions Photometric Lab
1121 Highway 74 South
Peachtree City, GA 30269

Scaled Data Report

TEST NUMBER: P1590935
CATALOG NUMBER: 24CGTX-20-L93050-W2A-5000K

## Luminous Intensity Polar Plot



Cooper Lighting Solutions Photometric Lab
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Scaled Data Report

TEST NUMBER: P1590935
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## 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 | 69 |
| 3 | 89 | 79 | 70 | 64 | 87 | 77 | 69 | 63 | 74 | 67 | 62 | 71 | 66 | 61 | 69 | 64 | 60 | 57 |
| 4 | 82 | 70 | 61 | 54 | 79 | 68 | 60 | 53 | 66 | 58 | 53 | 63 | 57 | 52 | 61 | 56 | 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 | 40 | 51 | 44 | 39 | 50 | 44 | 39 | 37 |
| 7 | 64 | 51 | 42 | 35 | 62 | 50 | 41 | 35 | 48 | 41 | 35 | 47 | 40 | 35 | 45 | 39 | 34 | 32 |
| 8 | 60 | 46 | 37 | 32 | 58 | 45 | 37 | 31 | 44 | 37 | 31 | 43 | 36 | 31 | 42 | 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 | 26 | 37 | 30 | 25 | 36 | 30 | 25 | 36 | 30 | 25 | 23 |

## AVERAGE LUMINANCE (cd/sqm):

| | 0° | 45° | 90° |
|---|---|---|---|
| 0° | 1032 | 1032 | 1032 |
| 5° | 1035 | 1031 | 1028 |
| 10° | 1035 | 1027 | 1034 |
| 15° | 1035 | 1029 | 1025 |
| 20° | 1034 | 1027 | 1028 |
| 25° | 1026 | 1023 | 1020 |
| 30° | 1022 | 1018 | 1020 |
| 35° | 1017 | 1006 | 1011 |
| 40° | 1010 | 1005 | 1006 |
| 45° | 1001 | 993 | 995 |
| 50° | 990 | 983 | 981 |
| 55° | 972 | 967 | 962 |
| 60° | 955 | 952 | 935 |
| 65° | 940 | 924 | 911 |
| 70° | 903 | 887 | 871 |
| 75° | 873 | 846 | 825 |
| 80° | 833 | 793 | 769 |
| 85° | 773 | 741 | 693 |

## MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°
Vertical Angle: 45°
Luminance: 1001 cd/sqm

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Scaled Data Report

TEST NUMBER: P1590935
CATALOG NUMBER: 24CGTX-20-L93050-W2A-5000K

**ZONAL LUMENS:**

| Zone | Lumens | % Fixture |
|---|---|---|
| 0°-10° | 72.6 | 3.2 |
| 10°-20° | 208.8 | 9.2 |
| 20°-30° | 317.7 | 14.0 |
| 30°-40° | 385.3 | 17.0 |
| 40°-50° | 403.0 | 17.8 |
| 50°-60° | 368.5 | 16.2 |
| 60°-70° | 286.8 | 12.6 |
| 70°-80° | 173.1 | 7.6 |
| 80°-90° | 53.7 | 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° | 599.2 | 26.4 |
| 0°-40° | 984.5 | 43.4 |
| 0°-60° | 1756.0 | 77.4 |
| 0°-90° | 2269.5 | 100.0 |
| 90°-120° | 0.0 | 0.0 |
| 90°-150° | 0.0 | 0.0 |
| 90°-180° | 0.0 | 0.0 |
| 0°-180° | 2269.5 | 100.0 |

**CANDELA DISTRIBUTION:**

| | 0° | 22.5° | 45° | 67.5° | 90° | Flux |
|---|---|---|---|---|---|---|
| 0° | 767 | 767 | 767 | 767 | 767 | |
| 5° | 766 | 766 | 763 | 763 | 761 | 73 |
| 15° | 743 | 741 | 739 | 738 | 736 | 209 |
| 25° | 691 | 688 | 689 | 688 | 687 | 319 |
| 35° | 619 | 615 | 613 | 614 | 616 | 387 |
| 45° | 526 | 523 | 522 | 521 | 523 | 405 |
| 55° | 414 | 414 | 412 | 411 | 410 | 371 |
| 65° | 295 | 293 | 290 | 288 | 286 | 291 |
| 75° | 168 | 167 | 163 | 160 | 159 | 178 |
| 85° | 50 | 50 | 48 | 46 | 45 | 56 |
| 90° | 0 | 0 | 0 | 0 | 0 | |

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Peachtree City, GA 30269

Scaled Data Report

TEST NUMBER: P1590935
CATALOG NUMBER: 24CGTX-20-L93050-W2A-5000K

**CANDELA DISTRIBUTION (FULL):**

| | 0° | 22.5° | 45° | 67.5° | 90° |
|---|---|---|---|---|---|
| 0° | *767.2* | 767.2 | 767.2 | 767.2 | 767.2 |
| 2.5° | *770.3* | *766.1* | *765.1* | *766.1* | *768.2* |
| 5° | *766.1* | 766.1 | 763.0 | 763.0 | 760.9 |
| 7.5° | *763.0* | 760.9 | 759.9 | 758.8 | 761.9 |
| 10° | *757.8* | 755.7 | 751.5 | 753.6 | 756.7 |
| 12.5° | *750.5* | 747.3 | 748.4 | 747.3 | 750.5 |
| 15° | *743.2* | 741.1 | 739.0 | 737.9 | 735.8 |
| 17.5° | *728.5* | 730.6 | 728.5 | 730.6 | 730.6 |
| 20° | *722.3* | 716.0 | 717.1 | 717.1 | 718.1 |
| 22.5° | *707.7* | 704.5 | 703.5 | 703.5 | 705.6 |
| 25° | *691.0* | 687.8 | 688.9 | 687.8 | 686.8 |
| 27.5° | *677.4* | 673.2 | 673.2 | 671.1 | 675.3 |
| 30° | *657.6* | 655.5 | 655.5 | 655.5 | 656.5 |
| 32.5° | *638.8* | 637.7 | 637.7 | 635.6 | 634.6 |
| 35° | *618.9* | 614.8 | 612.7 | 613.7 | 615.8 |
| 37.5° | *597.0* | 596.0 | 592.9 | 592.9 | 594.9 |
| 40° | *575.1* | 573.0 | 572.0 | 569.9 | 573.0 |
| 42.5° | *550.1* | 549.0 | 548.0 | 546.9 | 543.8 |
| 45° | *526.1* | 522.9 | 521.9 | 520.8 | 522.9 |
| 47.5° | *498.9* | 497.9 | 494.7 | 494.7 | 493.7 |
| 50° | *472.8* | 470.7 | 469.7 | 467.6 | 468.6 |
| 52.5° | *443.6* | 443.6 | 440.5 | 438.4 | 436.3 |
| 55° | *414.4* | 414.4 | 412.3 | 411.2 | 410.2 |
| 57.5° | *387.2* | 384.1 | 384.1 | 381.0 | 381.0 |
| 60° | *354.9* | 354.9 | 353.8 | 348.6 | 347.6 |
| 62.5° | *325.7* | 324.6 | 320.4 | 319.4 | 317.3 |
| 65° | *295.4* | 293.3 | 290.2 | 288.1 | 286.0 |
| 67.5° | *262.0* | 260.9 | 258.9 | 254.7 | 253.6 |
| 70° | *229.6* | 229.6 | 225.5 | 222.3 | 221.3 |
| 72.5° | *200.4* | 198.3 | 194.1 | 192.1 | 191.0 |
| 75° | *168.0* | 167.0 | 162.8 | 159.7 | 158.7 |
| 77.5° | *137.8* | 136.7 | 133.6 | 130.5 | 128.4 |
| 80° | *107.5* | 106.5 | 102.3 | 100.2 | 99.2 |
| 82.5° | *77.2* | 77.2 | 75.2 | 74.1 | 71.0 |
| 85° | *50.1* | 50.1 | 48.0 | 45.9 | 44.9 |
| 87.5° | *24.0* | 23.0 | 23.0 | 21.9 | 21.9 |
| 90° | *0.0* | 0.0 | 0.0 | 0.0 | 0.0 |

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TEST NUMBER: P1590935
CATALOG NUMBER: 24CGTX-20-L93050-W2A-5000K

**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 | 12.10 | 13.76 | 12.47 | 14.08 | 14.39 | 12.03 | 13.69 | 12.40 | 14.01 | 14.32 |
| | 3H | 14.03 | 15.53 | 14.40 | 15.86 | 16.22 | 13.89 | 15.40 | 14.27 | 15.73 | 16.09 |
| | 4H | 14.79 | 16.21 | 15.19 | 16.56 | 16.94 | 14.62 | 16.04 | 15.01 | 16.38 | 16.76 |
| | 6H | 15.40 | 16.72 | 15.81 | 17.08 | 17.47 | 15.17 | 16.49 | 15.58 | 16.85 | 17.25 |
| | 8H | 15.61 | 16.87 | 16.03 | 17.26 | 17.66 | 15.36 | 16.62 | 15.79 | 17.01 | 17.41 |
| | 12H | 15.76 | 16.97 | 16.19 | 17.35 | 17.78 | 15.50 | 16.71 | 15.93 | 17.09 | 17.52 |
| 4H | 2H | 12.76 | 14.18 | 13.16 | 14.53 | 14.90 | 12.70 | 14.12 | 13.10 | 14.47 | 14.85 |
| | 3H | 14.91 | 16.11 | 15.32 | 16.50 | 16.90 | 14.79 | 15.99 | 15.20 | 16.38 | 16.78 |
| | 4H | 15.82 | 16.90 | 16.25 | 17.31 | 17.75 | 15.65 | 16.73 | 16.08 | 17.14 | 17.58 |
| | 6H | 16.56 | 17.51 | 17.02 | 17.95 | 18.41 | 16.34 | 17.29 | 16.79 | 17.73 | 18.18 |
| | 8H | 16.83 | 17.72 | 17.29 | 18.16 | 18.63 | 16.59 | 17.48 | 17.04 | 17.92 | 18.38 |
| | 12H | 17.04 | 17.84 | 17.52 | 18.32 | 18.79 | 16.77 | 17.57 | 17.25 | 18.05 | 18.52 |
| 8H | 4H | 16.16 | 17.05 | 16.62 | 17.49 | 17.95 | 16.01 | 16.90 | 16.47 | 17.34 | 17.80 |
| | 6H | 17.04 | 17.79 | 17.54 | 18.27 | 18.75 | 16.84 | 17.58 | 17.33 | 18.07 | 18.54 |
| | 8H | 17.40 | 18.07 | 17.91 | 18.57 | 19.06 | 17.17 | 17.84 | 17.68 | 18.34 | 18.83 |
| | 12H | 17.70 | 18.29 | 18.21 | 18.78 | 19.34 | 17.44 | 18.03 | 17.95 | 18.52 | 19.08 |
| 12H | 4H | 16.20 | 17.00 | 16.68 | 17.48 | 17.94 | 16.06 | 16.86 | 16.54 | 17.34 | 17.80 |
| | 6H | 17.11 | 17.78 | 17.62 | 18.29 | 18.77 | 16.92 | 17.59 | 17.43 | 18.09 | 18.58 |
| | 8H | 17.54 | 18.13 | 18.04 | 18.62 | 19.17 | 17.32 | 17.91 | 17.82 | 18.40 | 18.96 |

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

Report Prepared for

Cooper Lighting Solutions

Metalux

Report Number: SP1-2512-631-24-R2

Test Date: 02/04/2026

Luminaire Tested: 22CGTX-50-L93050-W2A-5000K

Data in this report applies to families of products including 22CGTX

Report Generated By FNC07603 / LDUCLS01DT446
Version: v7.05

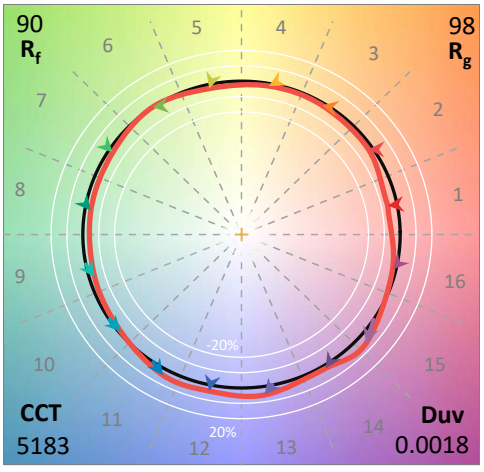
## Test Information

| | |
|---|---|
| Test Method: | LM-79-2019 |
| Report Number: | SP1-2512-631-24-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: | **22CGTX-50-L93050-W2A-5000K** |
| Description: | *THIS IS A REVISION OF REPORT SP1-2512-631-24-R2 TO UPDATE THE CATALOG INFORMATION* 2X2 5000 LUMEN HE CGTX TUNABLE WHITE FROM 3000K TO 5000K - 1 Volt |

## Spectral Parameters

| | |
|---|---|
| CCT (K): | 5183 |
| CIE u': | 0.2084 |
| CIE v': | 0.4838 |
| Duv: | 0.0018 |
| CIE x: | 0.3404 |
| CIE y: | 0.3513 |
| CIE z: | 0.3084 |
| Peak Wavelength (nm): | 630 |
| Dominant Wavelength (nm): | 567 |
| Purity: | 7.523728 |
| Rf: | 89.8 |
| Rg: | 98.4 |

| | |
|---|---|
| CRI (Ra): | 93.0 |
| R1: | 94.0 |
| R2: | 95.9 |
| R3: | 95.1 |
| R4: | 93.5 |
| R5: | 92.7 |
| R6: | 92.2 |
| R7: | 94.0 |
| R8: | 86.9 |
| R9: | 64.0 |
| R10: | 88.2 |
| R11: | 93.7 |
| R12: | 69.8 |
| R13: | 94.9 |
| R14: | 97.0 |
| R15: | 92.0 |



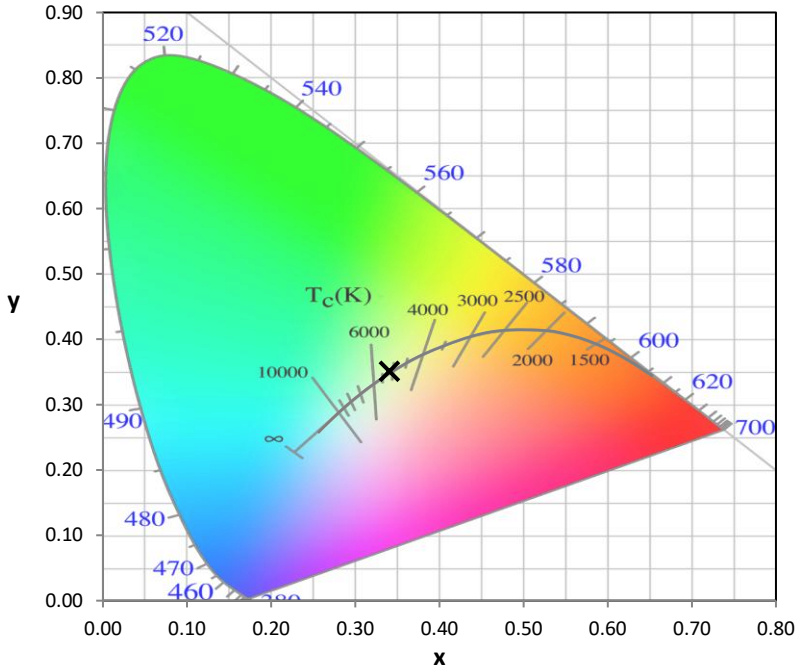

## Test Conditions

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

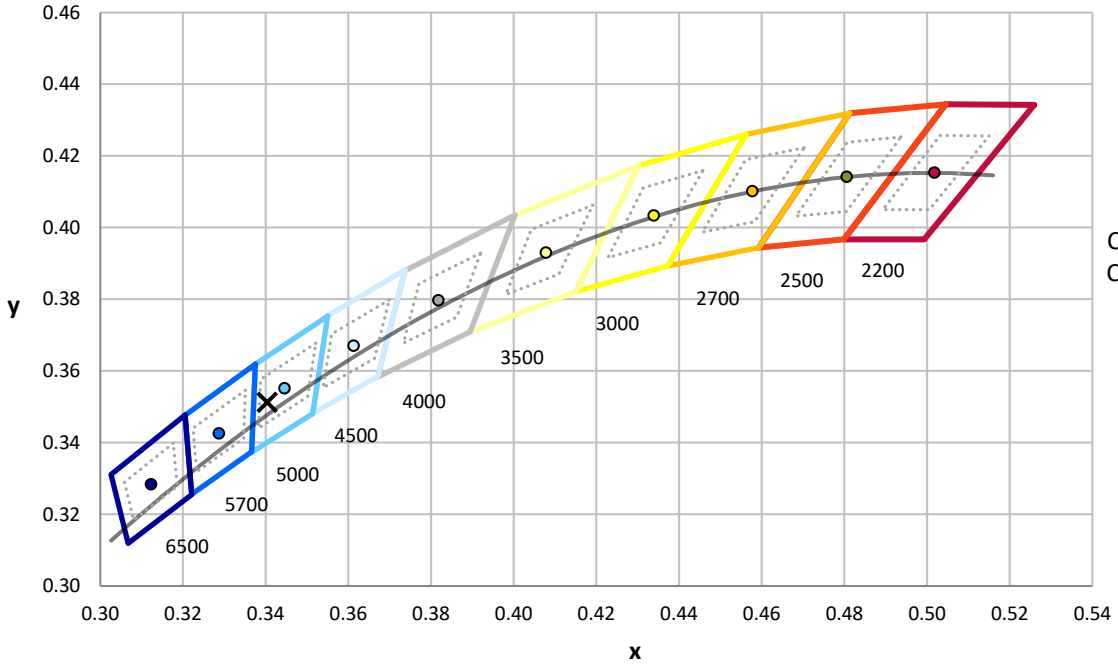
| Measurement and Test Equipment | | | |
|---|---|---|---|
| Instrument | Identification Number | Calibration Date | Calibration Due Date |
| Photometer | 76INCH SPHERE IN0058 | 12/16/2025 | 6/16/2026 |
| Power Meter | XITRON INXT2011004 | 10/21/2025 | 10/21/2026 |
| AC Power Source | CHROMA 61603 IN0063 | 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: SP1-2512-631-24-R2

## CIE 1931 Chromaticity Diagram




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

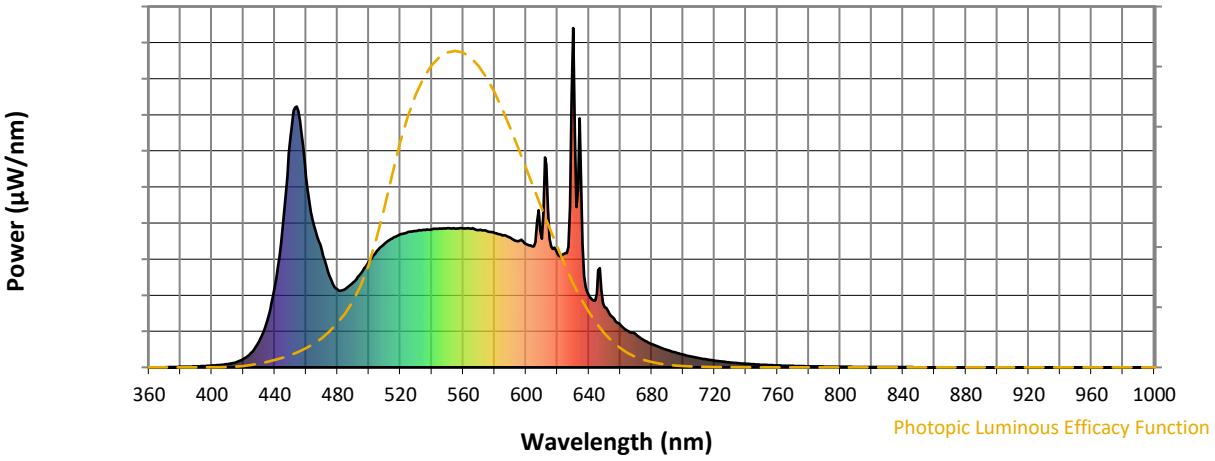



CCT = 5183K
CIE x = 0.3404
CIE y = 0.3513
Duv = 0.0018

Point lies inside the ANSI 5000K 4-step quadrangle

REPORT NUMBER: SP1-2512-631-24-R2

## Photopic Flux vs. Wavelength

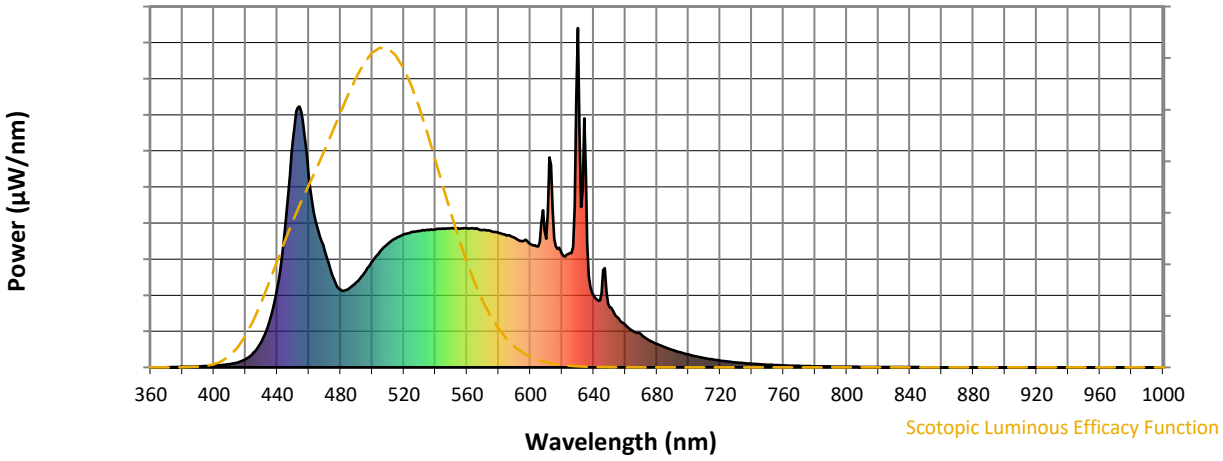



## Photopic Lumens: NR

| 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 | 251 | NR | 620 | 335 | NR | 750 | 8 | NR | 880 | 0 | NR |
| 365 | 0 | NR | 495 | 277 | NR | 625 | 337 | NR | 755 | 7 | NR | 885 | 0 | NR |
| 370 | 0 | NR | 500 | 312 | NR | 630 | 1000 | NR | 760 | 6 | NR | 890 | 0 | NR |
| 375 | 1 | NR | 505 | 342 | NR | 635 | 569 | NR | 765 | 5 | NR | 895 | 0 | NR |
| 380 | 2 | NR | 510 | 365 | NR | 640 | 212 | NR | 770 | 4 | NR | 900 | 0 | NR |
| 385 | 2 | NR | 515 | 380 | NR | 645 | 218 | NR | 775 | 4 | NR | 905 | 0 | NR |
| 390 | 3 | NR | 520 | 392 | NR | 650 | 177 | NR | 780 | 3 | NR | 910 | 0 | NR |
| 395 | 4 | NR | 525 | 399 | NR | 655 | 148 | NR | 785 | 3 | NR | 915 | 0 | NR |
| 400 | 5 | NR | 530 | 402 | NR | 660 | 126 | NR | 790 | 2 | NR | 920 | 0 | NR |
| 405 | 7 | NR | 535 | 406 | NR | 665 | 106 | NR | 795 | 2 | NR | 925 | 0 | NR |
| 410 | 10 | NR | 540 | 407 | NR | 670 | 97 | NR | 800 | 2 | NR | 930 | 0 | NR |
| 415 | 15 | NR | 545 | 409 | NR | 675 | 80 | NR | 805 | 2 | NR | 935 | 0 | NR |
| 420 | 25 | NR | 550 | 410 | NR | 680 | 69 | NR | 810 | 1 | NR | 940 | 0 | NR |
| 425 | 43 | NR | 555 | 409 | NR | 685 | 59 | NR | 815 | 1 | NR | 945 | 0 | NR |
| 430 | 76 | NR | 560 | 409 | NR | 690 | 51 | NR | 820 | 1 | NR | 950 | 0 | NR |
| 435 | 135 | NR | 565 | 409 | NR | 695 | 44 | NR | 825 | 1 | NR | 955 | 0 | NR |
| 440 | 235 | NR | 570 | 405 | NR | 700 | 38 | NR | 830 | 1 | NR | 960 | 0 | NR |
| 445 | 412 | NR | 575 | 402 | NR | 705 | 32 | NR | 835 | 1 | NR | 965 | 0 | NR |
| 450 | 675 | NR | 580 | 396 | NR | 710 | 27 | NR | 840 | 1 | NR | 970 | 0 | NR |
| 455 | 756 | NR | 585 | 389 | NR | 715 | 23 | NR | 845 | 1 | NR | 975 | 0 | NR |
| 460 | 560 | NR | 590 | 382 | NR | 720 | 20 | NR | 850 | 0 | NR | 980 | 0 | NR |
| 465 | 418 | NR | 595 | 371 | NR | 725 | 17 | NR | 855 | 0 | NR | 985 | 0 | NR |
| 470 | 344 | NR | 600 | 363 | NR | 730 | 15 | NR | 860 | 0 | NR | 990 | 0 | NR |
| 475 | 268 | NR | 605 | 356 | NR | 735 | 13 | NR | 865 | 0 | NR | 995 | 0 | NR |
| 480 | 229 | NR | 610 | 379 | NR | 740 | 11 | NR | 870 | 0 | NR | 1000 | 0 | NR |
| 485 | 231 | NR | 615 | 379 | NR | 745 | 9 | NR | 875 | 0 | NR | | | |

REPORT NUMBER: SP1-2512-631-24-R2

## Scotopic Flux vs. Wavelength

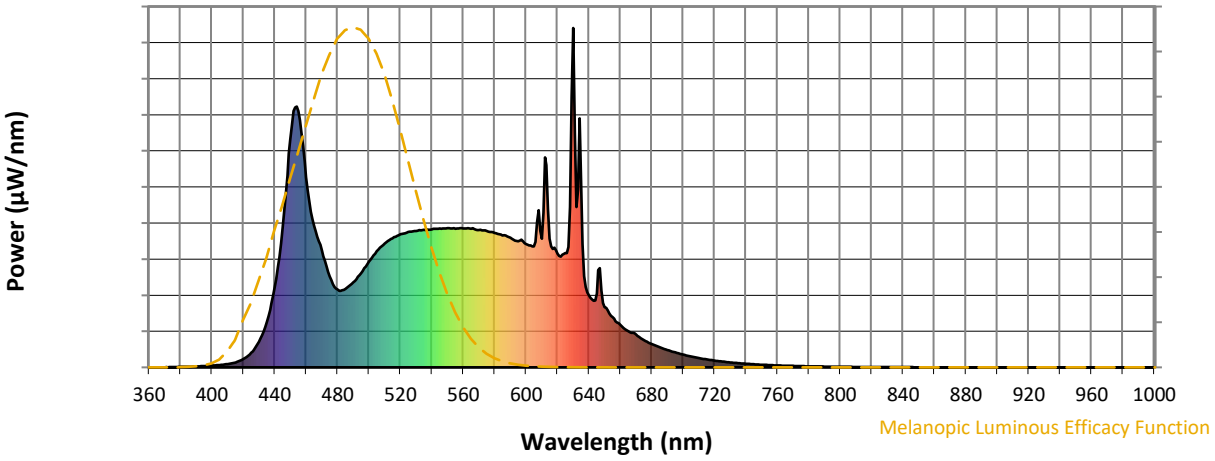



**Scotopic Lumens: NR** **S/P: 2.11**

| 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 | 251 | NR | 620 | 335 | NR | 750 | 8 | NR | 880 | 0 | NR |
| 365 | 0 | NR | 495 | 277 | NR | 625 | 337 | NR | 755 | 7 | NR | 885 | 0 | NR |
| 370 | 0 | NR | 500 | 312 | NR | 630 | 1000 | NR | 760 | 6 | NR | 890 | 0 | NR |
| 375 | 1 | NR | 505 | 342 | NR | 635 | 569 | NR | 765 | 5 | NR | 895 | 0 | NR |
| 380 | 2 | NR | 510 | 365 | NR | 640 | 212 | NR | 770 | 4 | NR | 900 | 0 | NR |
| 385 | 2 | NR | 515 | 380 | NR | 645 | 218 | NR | 775 | 4 | NR | 905 | 0 | NR |
| 390 | 3 | NR | 520 | 392 | NR | 650 | 177 | NR | 780 | 3 | NR | 910 | 0 | NR |
| 395 | 4 | NR | 525 | 399 | NR | 655 | 148 | NR | 785 | 3 | NR | 915 | 0 | NR |
| 400 | 5 | NR | 530 | 402 | NR | 660 | 126 | NR | 790 | 2 | NR | 920 | 0 | NR |
| 405 | 7 | NR | 535 | 406 | NR | 665 | 106 | NR | 795 | 2 | NR | 925 | 0 | NR |
| 410 | 10 | NR | 540 | 407 | NR | 670 | 97 | NR | 800 | 2 | NR | 930 | 0 | NR |
| 415 | 15 | NR | 545 | 409 | NR | 675 | 80 | NR | 805 | 2 | NR | 935 | 0 | NR |
| 420 | 25 | NR | 550 | 410 | NR | 680 | 69 | NR | 810 | 1 | NR | 940 | 0 | NR |
| 425 | 43 | NR | 555 | 409 | NR | 685 | 59 | NR | 815 | 1 | NR | 945 | 0 | NR |
| 430 | 76 | NR | 560 | 409 | NR | 690 | 51 | NR | 820 | 1 | NR | 950 | 0 | NR |
| 435 | 135 | NR | 565 | 409 | NR | 695 | 44 | NR | 825 | 1 | NR | 955 | 0 | NR |
| 440 | 235 | NR | 570 | 405 | NR | 700 | 38 | NR | 830 | 1 | NR | 960 | 0 | NR |
| 445 | 412 | NR | 575 | 402 | NR | 705 | 32 | NR | 835 | 1 | NR | 965 | 0 | NR |
| 450 | 675 | NR | 580 | 396 | NR | 710 | 27 | NR | 840 | 1 | NR | 970 | 0 | NR |
| 455 | 756 | NR | 585 | 389 | NR | 715 | 23 | NR | 845 | 1 | NR | 975 | 0 | NR |
| 460 | 560 | NR | 590 | 382 | NR | 720 | 20 | NR | 850 | 0 | NR | 980 | 0 | NR |
| 465 | 418 | NR | 595 | 371 | NR | 725 | 17 | NR | 855 | 0 | NR | 985 | 0 | NR |
| 470 | 344 | NR | 600 | 363 | NR | 730 | 15 | NR | 860 | 0 | NR | 990 | 0 | NR |
| 475 | 268 | NR | 605 | 356 | NR | 735 | 13 | NR | 865 | 0 | NR | 995 | 0 | NR |
| 480 | 229 | NR | 610 | 379 | NR | 740 | 11 | NR | 870 | 0 | NR | 1000 | 0 | NR |
| 485 | 231 | NR | 615 | 379 | NR | 745 | 9 | NR | 875 | 0 | NR | | | |

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## Melanopic Flux vs. Wavelength




**Melanopic Lumens: NR** **M/P: 4.6**

| 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 | 251 | NR | 620 | 335 | NR | 750 | 8 | NR | 880 | 0 | NR |
| 365 | 0 | NR | 495 | 277 | NR | 625 | 337 | NR | 755 | 7 | NR | 885 | 0 | NR |
| 370 | 0 | NR | 500 | 312 | NR | 630 | 1000 | NR | 760 | 6 | NR | 890 | 0 | NR |
| 375 | 1 | NR | 505 | 342 | NR | 635 | 569 | NR | 765 | 5 | NR | 895 | 0 | NR |
| 380 | 2 | NR | 510 | 365 | NR | 640 | 212 | NR | 770 | 4 | NR | 900 | 0 | NR |
| 385 | 2 | NR | 515 | 380 | NR | 645 | 218 | NR | 775 | 4 | NR | 905 | 0 | NR |
| 390 | 3 | NR | 520 | 392 | NR | 650 | 177 | NR | 780 | 3 | NR | 910 | 0 | NR |
| 395 | 4 | NR | 525 | 399 | NR | 655 | 148 | NR | 785 | 3 | NR | 915 | 0 | NR |
| 400 | 5 | NR | 530 | 402 | NR | 660 | 126 | NR | 790 | 2 | NR | 920 | 0 | NR |
| 405 | 7 | NR | 535 | 406 | NR | 665 | 106 | NR | 795 | 2 | NR | 925 | 0 | NR |
| 410 | 10 | NR | 540 | 407 | NR | 670 | 97 | NR | 800 | 2 | NR | 930 | 0 | NR |
| 415 | 15 | NR | 545 | 409 | NR | 675 | 80 | NR | 805 | 2 | NR | 935 | 0 | NR |
| 420 | 25 | NR | 550 | 410 | NR | 680 | 69 | NR | 810 | 1 | NR | 940 | 0 | NR |
| 425 | 43 | NR | 555 | 409 | NR | 685 | 59 | NR | 815 | 1 | NR | 945 | 0 | NR |
| 430 | 76 | NR | 560 | 409 | NR | 690 | 51 | NR | 820 | 1 | NR | 950 | 0 | NR |
| 435 | 135 | NR | 565 | 409 | NR | 695 | 44 | NR | 825 | 1 | NR | 955 | 0 | NR |
| 440 | 235 | NR | 570 | 405 | NR | 700 | 38 | NR | 830 | 1 | NR | 960 | 0 | NR |
| 445 | 412 | NR | 575 | 402 | NR | 705 | 32 | NR | 835 | 1 | NR | 965 | 0 | NR |
| 450 | 675 | NR | 580 | 396 | NR | 710 | 27 | NR | 840 | 1 | NR | 970 | 0 | NR |
| 455 | 756 | NR | 585 | 389 | NR | 715 | 23 | NR | 845 | 1 | NR | 975 | 0 | NR |
| 460 | 560 | NR | 590 | 382 | NR | 720 | 20 | NR | 850 | 0 | NR | 980 | 0 | NR |
| 465 | 418 | NR | 595 | 371 | NR | 725 | 17 | NR | 855 | 0 | NR | 985 | 0 | NR |
| 470 | 344 | NR | 600 | 363 | NR | 730 | 15 | NR | 860 | 0 | NR | 990 | 0 | NR |
| 475 | 268 | NR | 605 | 356 | NR | 735 | 13 | NR | 865 | 0 | NR | 995 | 0 | NR |
| 480 | 229 | NR | 610 | 379 | NR | 740 | 11 | NR | 870 | 0 | NR | 1000 | 0 | NR |
| 485 | 231 | NR | 615 | 379 | NR | 745 | 9 | NR | 875 | 0 | NR | | | |

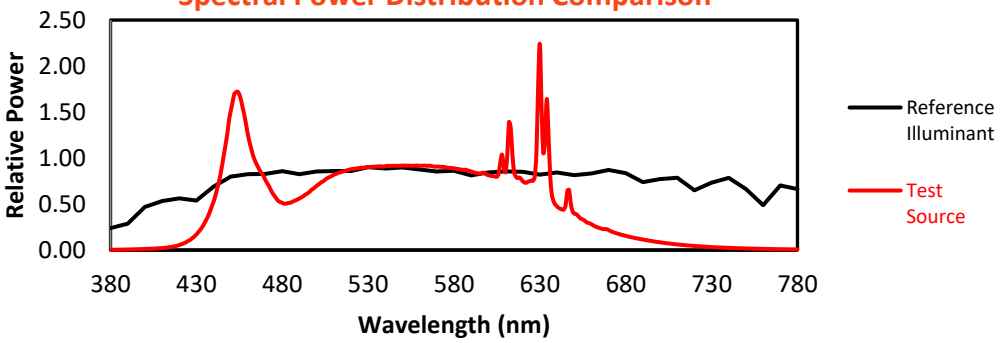
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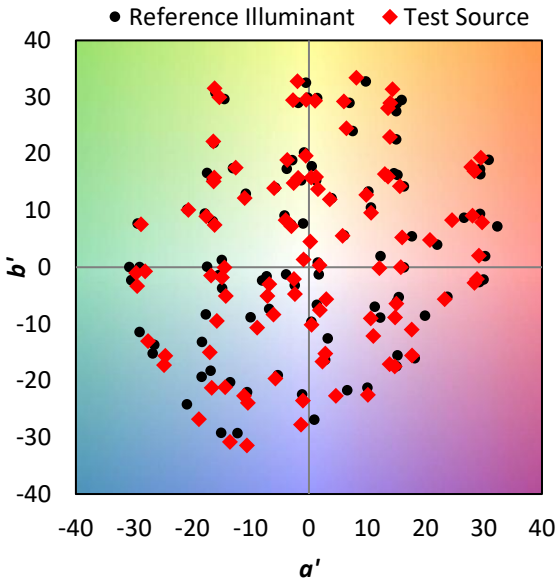
## Summary

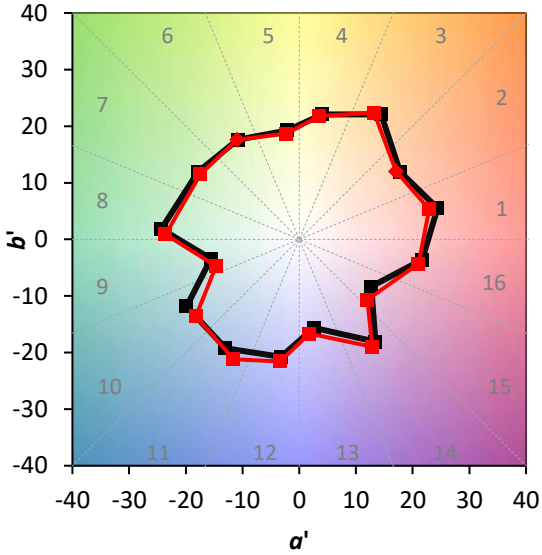
$R_f$ = 89.8
$R_g$ = 98.4
CIE $R_a$ = 93.0
$R_9$ = 64.0

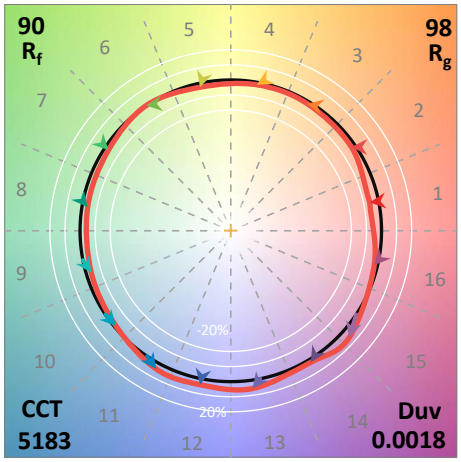
## Spectral Power Distribution Comparison

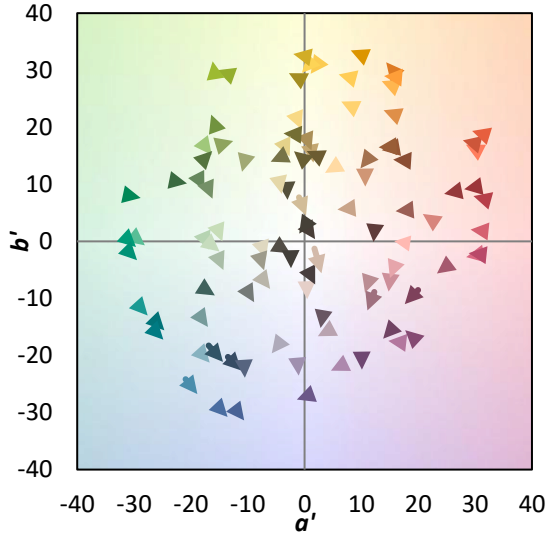



## Color Vector Graphics



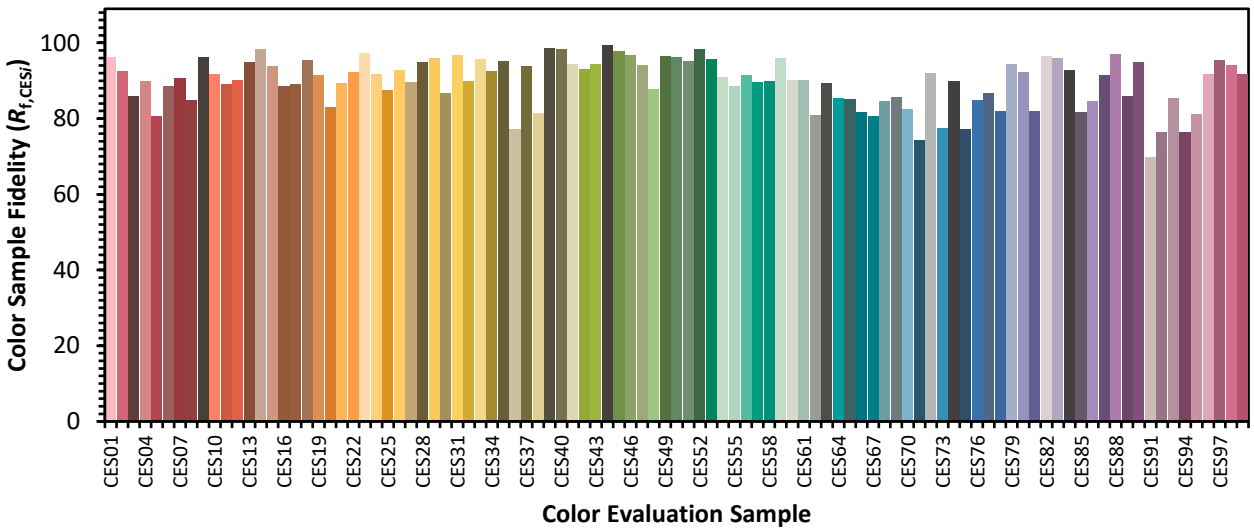



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**Individual Sample Fidelity Index ($R_{f,i}$)**

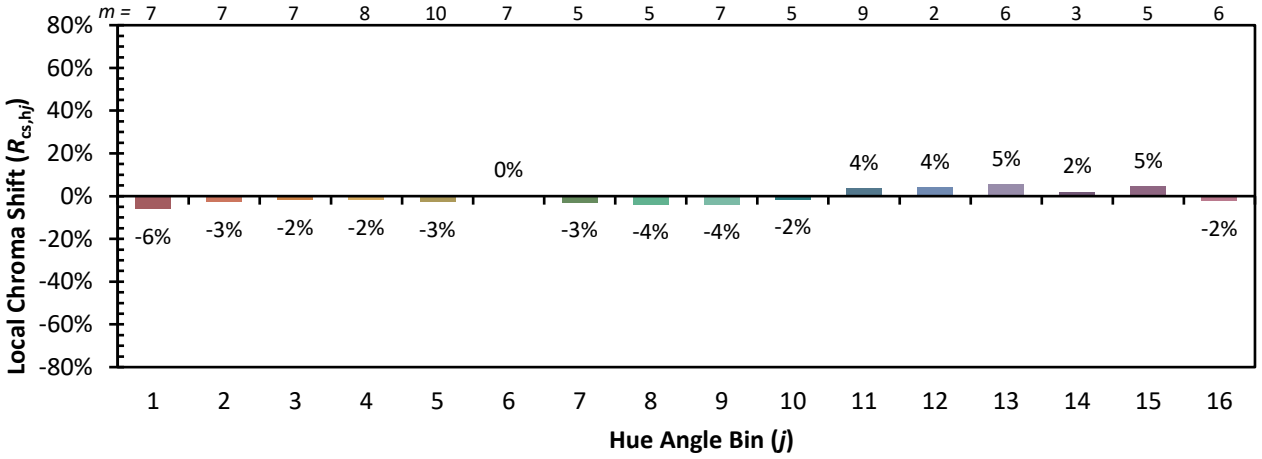
| | | | |
|---|---|---|---|
| CES01 = 85 | CES26 = 93 | CES51 = 95 | CES76 = 85 |
| CES02 = 60 | CES27 = 90 | CES52 = 98 | CES77 = 87 |
| CES03 = 31 | CES28 = 95 | CES53 = 96 | CES78 = 82 |
| CES04 = 68 | CES29 = 96 | CES54 = 91 | CES79 = 94 |
| CES05 = 47 | CES30 = 87 | CES55 = 89 | CES80 = 92 |
| CES06 = 50 | CES31 = 97 | CES56 = 92 | CES81 = 82 |
| CES07 = 41 | CES32 = 90 | CES57 = 90 | CES82 = 96 |
| CES08 = 40 | CES33 = 96 | CES58 = 90 | CES83 = 96 |
| CES09 = 29 | CES34 = 92 | CES59 = 96 | CES84 = 93 |
| CES10 = 73 | CES35 = 95 | CES60 = 90 | CES85 = 82 |
| CES11 = 55 | CES36 = 77 | CES61 = 90 | CES86 = 85 |
| CES12 = 62 | CES37 = 94 | CES62 = 81 | CES87 = 91 |
| CES13 = 42 | CES38 = 82 | CES63 = 89 | CES88 = 97 |
| CES14 = 74 | CES39 = 99 | CES64 = 85 | CES89 = 86 |
| CES15 = 71 | CES40 = 98 | CES65 = 85 | CES90 = 95 |
| CES16 = 46 | CES41 = 94 | CES66 = 82 | CES91 = 70 |
| CES17 = 48 | CES42 = 93 | CES67 = 81 | CES92 = 76 |
| CES18 = 56 | CES43 = 94 | CES68 = 85 | CES93 = 85 |
| CES19 = 70 | CES44 = 99 | CES69 = 86 | CES94 = 76 |
| CES20 = 65 | CES45 = 98 | CES70 = 83 | CES95 = 81 |
| CES21 = 84 | CES46 = 97 | CES71 = 74 | CES96 = 92 |
| CES22 = 77 | CES47 = 94 | CES72 = 92 | CES97 = 96 |
| CES23 = 91 | CES48 = 88 | CES73 = 78 | CES98 = 94 |
| CES24 = 90 | CES49 = 97 | CES74 = 90 | CES99 = 92 |
| CES25 = 70 | CES50 = 96 | CES75 = 77 | |

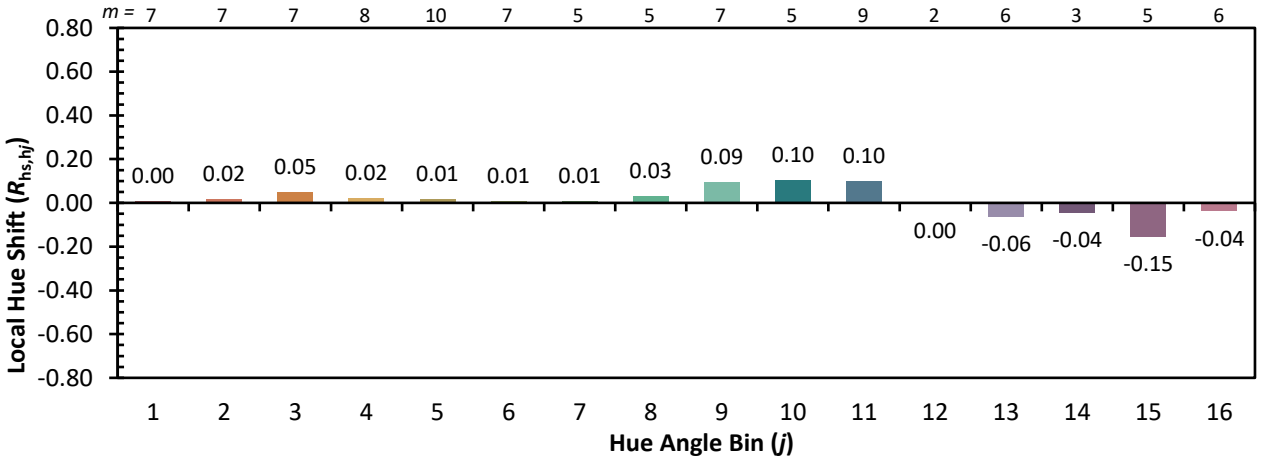


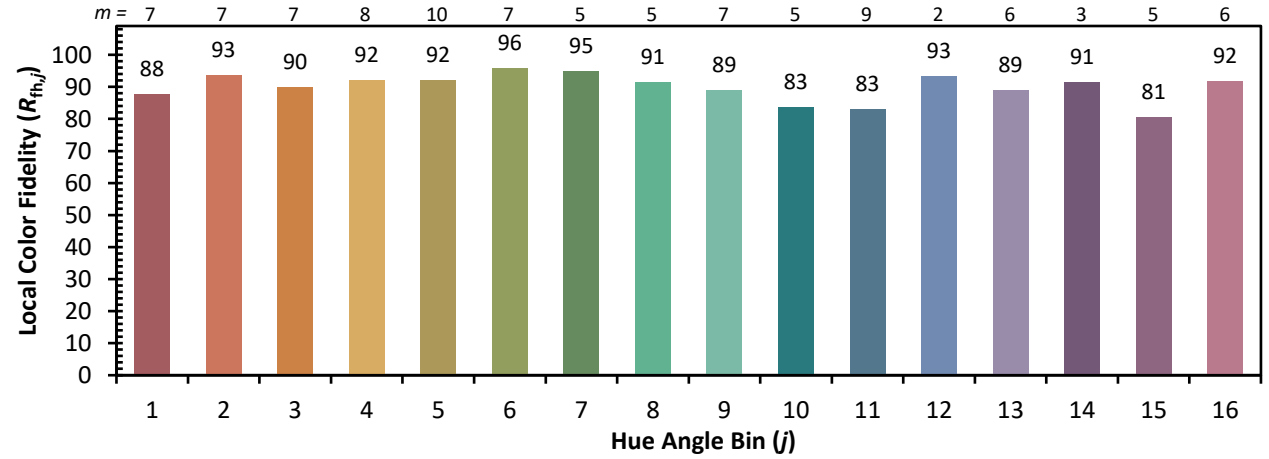
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## Color Rendition by Hue-Angle Bin



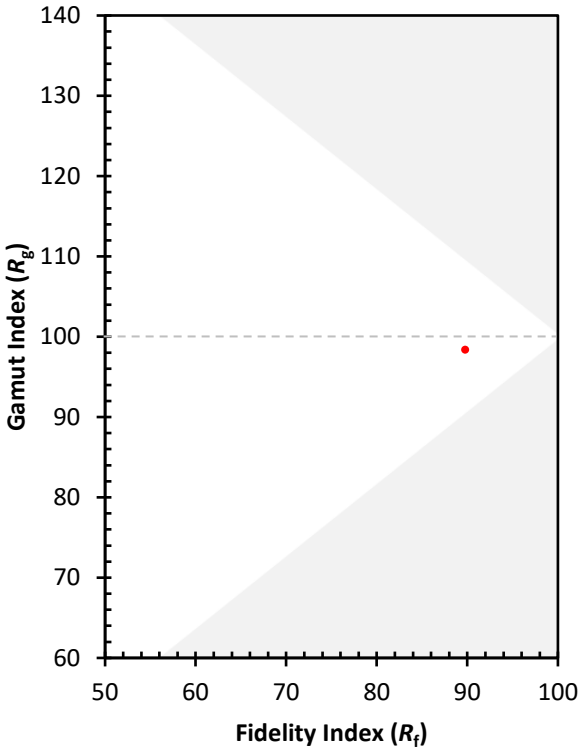



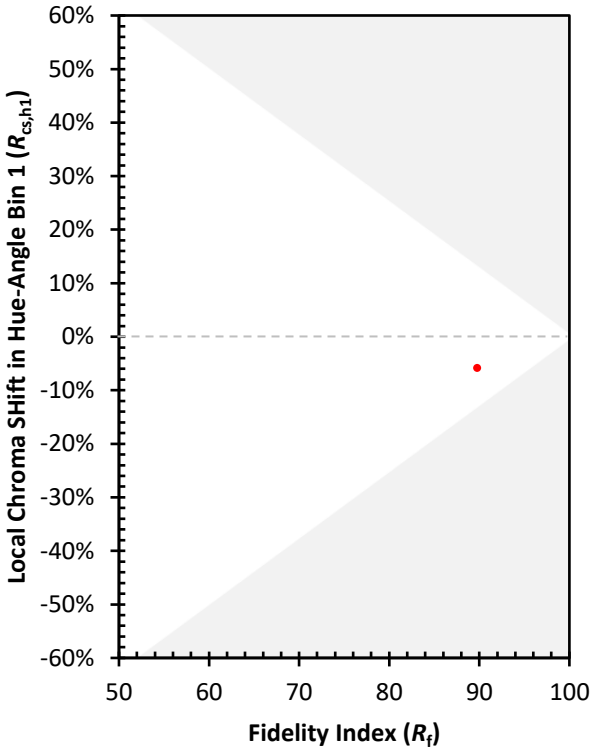



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## Measure Comparisons




(END OF REPORT)