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: P1527733

Luminaire Tested: 22CGTX-45-B2750-W2A-2700K

Issue Date: 8/26/2026

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: | P1527733 |
| Test Lab: | COOPER LIGHTING SOLUTIONS |
| Issue Date: | 8/26/2026 |
| Manufacturer: | COOPER LIGHTING SOLUTIONS |
| Product Line: | METALUX |
| Catalog Number: | 22CGTX-45-B2750-W2A-2700K |
| Description: | 2X2 4500 LUMEN CGTX TROFFER WITH BIO UP LEDS AT 2700K CCT WITH FROSTED SMOOTH L |
| Light Source: | 2700K CCT, 80 CRI LEDS |
| Ballast/Driver: | - |

**Summary**

| | |
|---|---|
| Lumens per Lamp: | N/A |
| Luminaire Lumens: | 4476.9 lumens |
| Efficiency: | N/A |
| Efficacy: | 102.4 lumens/watt |
| Spacing Criteria (0/90/45): | 1.26 / 1.26 / 1.38 |
| Luminous Opening: | Rectangular (W 1.81' x L: 1.81' x H: 0') |
| CIE Type: | Direct |

| | |
|---|---|
| Input Watts (W): | 43.7 |
| 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 |

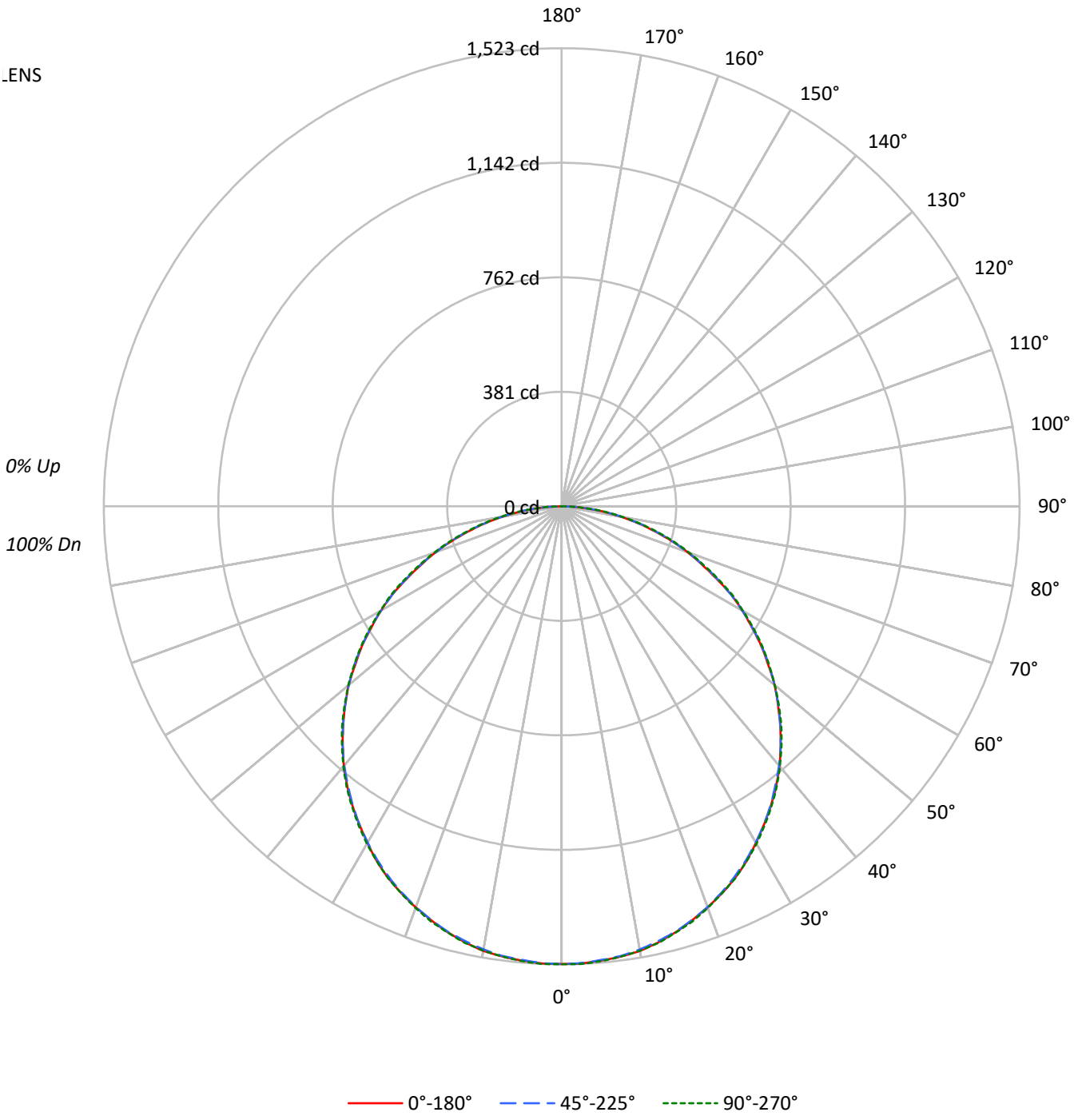


Cooper Lighting Solutions Photometric Lab
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Scaled Data Report

TEST NUMBER: P1527733
CATALOG NUMBER: 22CGTX-45-B2750-W2A-2700K

## Luminous Intensity Polar Plot



Cooper Lighting Solutions Photometric Lab
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Scaled Data Report

TEST NUMBER: P1527733
CATALOG NUMBER: 22CGTX-45-B2750-W2A-2700K

## 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 | 94 | 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 | 58 |
| 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 | 63 | 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 | 41 | 33 | 28 | 39 | 33 | 28 | 38 | 32 | 28 | 26 |
| 10 | 52 | 39 | 31 | 26 | 51 | 38 | 31 | 26 | 37 | 30 | 25 | 37 | 30 | 25 | 36 | 30 | 25 | 23 |

## AVERAGE LUMINANCE (cd/sqm):

| | 0° | 45° | 90° |
|---|---|---|---|
| 0° | 4987 | 4987 | 4987 |
| 5° | 4986 | 4980 | 4993 |
| 10° | 4994 | 4977 | 4991 |
| 15° | 4973 | 4966 | 4976 |
| 20° | 4948 | 4944 | 4955 |
| 25° | 4931 | 4917 | 4935 |
| 30° | 4888 | 4884 | 4903 |
| 35° | 4856 | 4848 | 4868 |
| 40° | 4820 | 4812 | 4829 |
| 45° | 4763 | 4763 | 4787 |
| 50° | 4715 | 4710 | 4720 |
| 55° | 4633 | 4639 | 4661 |
| 60° | 4548 | 4548 | 4567 |
| 65° | 4396 | 4427 | 4466 |
| 70° | 4273 | 4273 | 4330 |
| 75° | 4038 | 4114 | 4178 |
| 80° | 3793 | 3830 | 3925 |
| 85° | 3383 | 3496 | 3496 |

## MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 90°
Vertical Angle: 45°
Luminance: 4787 cd/sqm

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Peachtree City, GA 30269

Scaled Data Report

TEST NUMBER: P1527733
CATALOG NUMBER: 22CGTX-45-B2750-W2A-2700K

**ZONAL LUMENS:**

| Zone | Lumens | % Fixture |
|---|---|---|
| 0°-10° | 144.1 | 3.2 |
| 10°-20° | 413.5 | 9.2 |
| 20°-30° | 627.6 | 14.0 |
| 30°-40° | 759.3 | 17.0 |
| 40°-50° | 793.7 | 17.7 |
| 50°-60° | 725.8 | 16.2 |
| 60°-70° | 566.0 | 12.6 |
| 70°-80° | 342.9 | 7.7 |
| 80°-90° | 104.0 | 2.3 |
| 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° | 1185.2 | 26.5 |
| 0°-40° | 1944.5 | 43.4 |
| 0°-60° | 3464.0 | 77.4 |
| 0°-90° | 4476.9 | 100.0 |
| 90°-120° | 0.0 | 0.0 |
| 90°-150° | 0.0 | 0.0 |
| 90°-180° | 0.0 | 0.0 |
| 0°-180° | 4476.9 | 100.0 |

**CANDELA DISTRIBUTION:**

| | 0° | 22.5° | 45° | 67.5° | 90° | Flux |
|---|---|---|---|---|---|---|
| 0° | 1522 | 1522 | 1522 | 1522 | 1522 | |
| 5° | 1516 | 1515 | 1514 | 1516 | 1518 | 144 |
| 15° | 1466 | 1464 | 1464 | 1467 | 1467 | 414 |
| 25° | 1364 | 1360 | 1360 | 1363 | 1365 | 628 |
| 35° | 1214 | 1212 | 1212 | 1215 | 1217 | 759 |
| 45° | 1028 | 1027 | 1028 | 1030 | 1033 | 793 |
| 55° | 811 | 812 | 812 | 813 | 816 | 724 |
| 65° | 567 | 570 | 571 | 573 | 576 | 563 |
| 75° | 319 | 321 | 325 | 326 | 330 | 339 |
| 85° | 90 | 91 | 93 | 93 | 93 | 101 |
| 90° | 0 | 0 | 0 | 0 | 0 | |

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Scaled Data Report

TEST NUMBER: P1527733
CATALOG NUMBER: 22CGTX-45-B2750-W2A-2700K

**CANDELA DISTRIBUTION (FULL):**

| | 0° | 22.5° | 45° | 67.5° | 90° |
|---|---|---|---|---|---|
| 0° | 1522 | 1522 | 1522 | 1522 | *1522* |
| 2.5° | *1521* | *1520* | *1520* | *1521* | *1523* |
| 5° | 1516 | 1515 | 1514 | 1516 | *1518* |
| 7.5° | 1510 | 1507 | 1508 | 1508 | *1510* |
| 10° | 1501 | 1497 | 1496 | 1498 | *1500* |
| 12.5° | 1485 | 1482 | 1481 | 1484 | *1487* |
| 15° | 1466 | 1464 | 1464 | 1467 | *1467* |
| 17.5° | 1443 | 1444 | 1442 | 1444 | *1447* |
| 20° | 1419 | 1419 | 1418 | 1420 | *1421* |
| 22.5° | 1393 | 1390 | 1390 | 1393 | *1393* |
| 25° | 1364 | 1360 | 1360 | 1363 | *1365* |
| 27.5° | 1331 | 1328 | 1327 | 1331 | *1331* |
| 30° | 1292 | 1291 | 1291 | 1293 | *1296* |
| 32.5° | 1253 | 1253 | 1253 | 1254 | *1257* |
| 35° | 1214 | 1212 | 1212 | 1215 | *1217* |
| 37.5° | 1172 | 1169 | 1168 | 1173 | *1175* |
| 40° | 1127 | 1126 | 1125 | 1126 | *1129* |
| 42.5° | 1078 | 1076 | 1078 | 1080 | *1082* |
| 45° | 1028 | 1027 | 1028 | 1030 | *1033* |
| 47.5° | 976 | 977 | 977 | 979 | *980* |
| 50° | 925 | 924 | 924 | 924 | *926* |
| 52.5° | 866 | 866 | 870 | 870 | *871* |
| 55° | 811 | 812 | 812 | 813 | *816* |
| 57.5° | 751 | 752 | 753 | 757 | *757* |
| 60° | 694 | 693 | 694 | 697 | *697* |
| 62.5° | 635 | 632 | 634 | 636 | *641* |
| 65° | 567 | 570 | 571 | 573 | *576* |
| 67.5° | 504 | 506 | 509 | 515 | *512* |
| 70° | 446 | 446 | 446 | 449 | *452* |
| 72.5° | 383 | 384 | 386 | 387 | *391* |
| 75° | 319 | 321 | 325 | 326 | *330* |
| 77.5° | 261 | 261 | 265 | 267 | *268* |
| 80° | 201 | 200 | 203 | 207 | *208* |
| 82.5° | 144 | 145 | 148 | 150 | *151* |
| 85° | 90 | 91 | 93 | 93 | *93* |
| 87.5° | 37 | 40 | 41 | 42 | *42* |
| 90° | 0 | 0 | 0 | 0 | *0* |

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TEST NUMBER: P1527733
CATALOG NUMBER: 22CGTX-45-B2750-W2A-2700K

**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 | 17.49 | 19.15 | 17.86 | 19.47 | 19.78 | 17.54 | 19.20 | 17.90 | 19.51 | 19.83 |
| | 3H | 19.39 | 20.89 | 19.76 | 21.22 | 21.58 | 19.46 | 20.96 | 19.83 | 21.29 | 21.65 |
| | 4H | 20.13 | 21.55 | 20.52 | 21.89 | 22.27 | 20.22 | 21.64 | 20.61 | 21.98 | 22.36 |
| | 6H | 20.70 | 22.02 | 21.11 | 22.38 | 22.77 | 20.81 | 22.13 | 21.22 | 22.49 | 22.88 |
| | 8H | 20.90 | 22.16 | 21.32 | 22.55 | 22.94 | 21.02 | 22.28 | 21.44 | 22.66 | 23.06 |
| | 12H | 21.03 | 22.24 | 21.46 | 22.62 | 23.05 | 21.16 | 22.37 | 21.59 | 22.75 | 23.18 |
| 4H | 2H | 18.16 | 19.58 | 18.56 | 19.93 | 20.30 | 18.20 | 19.62 | 18.59 | 19.96 | 20.34 |
| | 3H | 20.29 | 21.48 | 20.69 | 21.88 | 22.28 | 20.34 | 21.54 | 20.75 | 21.93 | 22.33 |
| | 4H | 21.16 | 22.24 | 21.59 | 22.66 | 23.09 | 21.24 | 22.32 | 21.67 | 22.73 | 23.17 |
| | 6H | 21.87 | 22.82 | 22.32 | 23.26 | 23.71 | 21.97 | 22.92 | 22.42 | 23.36 | 23.81 |
| | 8H | 22.12 | 23.01 | 22.58 | 23.45 | 23.91 | 22.23 | 23.12 | 22.69 | 23.57 | 24.03 |
| | 12H | 22.31 | 23.11 | 22.79 | 23.58 | 24.05 | 22.43 | 23.23 | 22.91 | 23.71 | 24.18 |
| 8H | 4H | 21.52 | 22.41 | 21.98 | 22.85 | 23.31 | 21.59 | 22.48 | 22.05 | 22.92 | 23.38 |
| | 6H | 22.36 | 23.11 | 22.86 | 23.59 | 24.07 | 22.46 | 23.20 | 22.95 | 23.69 | 24.16 |
| | 8H | 22.70 | 23.36 | 23.20 | 23.87 | 24.35 | 22.81 | 23.47 | 23.32 | 23.98 | 24.46 |
| | 12H | 22.97 | 23.56 | 23.47 | 24.05 | 24.61 | 23.09 | 23.68 | 23.60 | 24.17 | 24.73 |
| 12H | 4H | 21.57 | 22.37 | 22.05 | 22.84 | 23.31 | 21.63 | 22.43 | 22.11 | 22.91 | 23.38 |
| | 6H | 22.44 | 23.11 | 22.95 | 23.61 | 24.10 | 22.53 | 23.20 | 23.04 | 23.70 | 24.19 |
| | 8H | 22.84 | 23.43 | 23.34 | 23.92 | 24.48 | 22.95 | 23.54 | 23.45 | 24.02 | 24.58 |

Cooper Lighting Solutions Photometric Lab
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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: SP1-2505-441-19-R2

Test Date: 06/13/2025

Luminaire Tested: 24CGTX-55-B2750-W2A-2700K

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

Report Generated By FNC07603 / LDUCLS01DT446
Version: v7.04

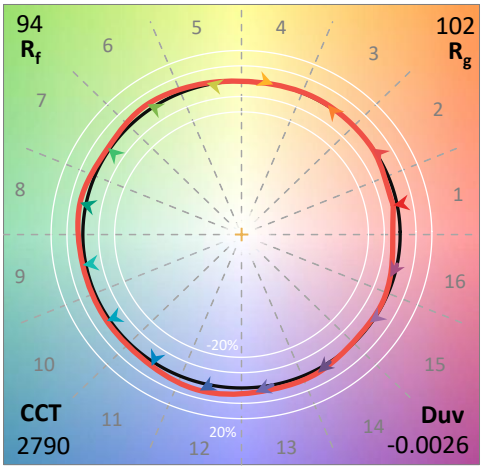
## Test Information

| | |
|---|---|
| Test Method: | LM-79-2019 |
| Report Number: | SP1-2505-441-19-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-B2750-W2A-2700K** |
| Description: | *THIS IS A REVISION OF REPORT SP1-2504-441-19-R2 TO UPDATE THE CATALOG INFORMATION* 2X4 5500 LUMEN CGTX AT 9.0V |

## Spectral Parameters

| | |
|---|---|
| CCT (K): | 2790 |
| CIE u': | 0.2594 |
| CIE v': | 0.5218 |
| Duv: | -0.0026 |
| CIE x: | 0.4483 |
| CIE y: | 0.4008 |
| CIE z: | 0.1509 |
| Peak Wavelength (nm): | 630 |
| Dominant Wavelength (nm): | 584 |
| Purity: | 54.87344 |
| Rf: | 93.8 |
| Rg: | 102.2 |

| | | | | | |
|---|---|---|---|---|---|
| CRI (Ra): | 95.1 | | | | |
| R1: | 96.3 | R9: | 82.2 | | |
| R2: | 97.2 | R10: | 95.9 | | |
| R3: | 99.0 | R11: | 90.1 | | |
| R4: | 95.3 | R12: | 90.6 | | |
| R5: | 95.9 | R13: | 96.2 | | |
| R6: | 91.0 | R14: | 97.9 | | |
| R7: | 93.9 | R15: | 99.0 | | |
| R8: | 92.1 | | | | |



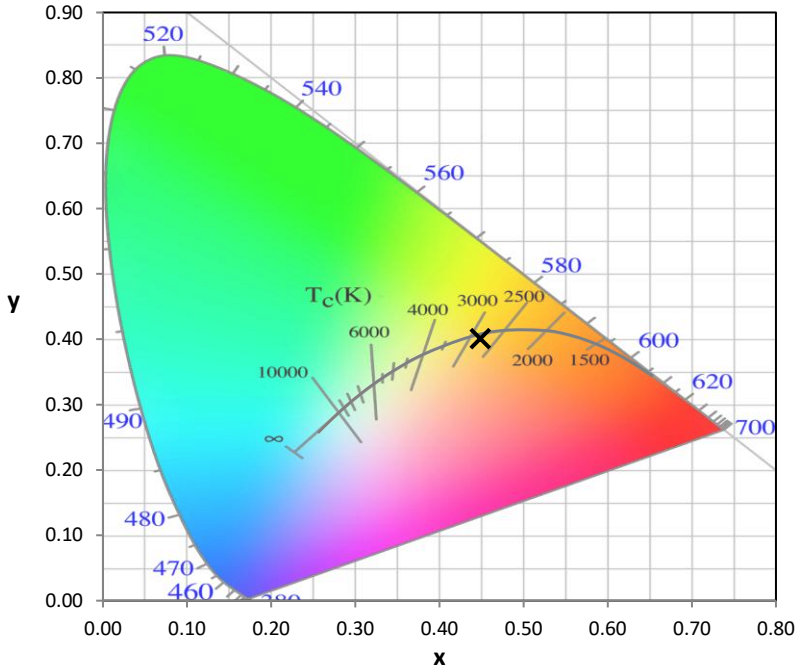

## Test Conditions

| | |
|---|---|
| Stabilization Time: | 20M |
| Operation Time: | 1H 20M |
| Sphere Temperature (°C): | 25.0 |

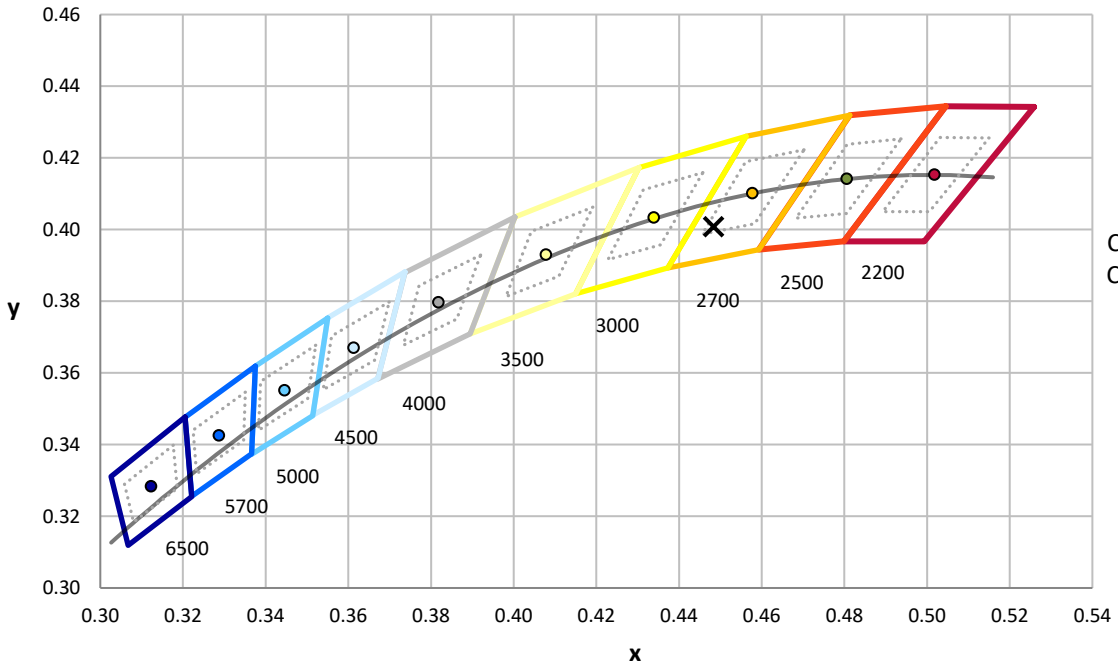
| Measurement and Test Equipment | | | |
|---|---|---|---|
| Instrument | Identification Number | Calibration Date | Calibration Due Date |
| Photometer | 76INCH SPHERE IN0058 | 12/16/2024 | 6/16/2025 |
| Power Meter | XITRON INXT2011004 | 1/21/2025 | 1/21/2026 |
| AC Power Source | CHROMA 61603 IN0063 | 10/22/2024 | 10/22/2025 |
| DC Power Source | AGILENT E3634A IN0208 | 10/22/2024 | 10/22/2025 |
| Sphere Thermometer | ONSET IN0085 | 10/22/2024 | 10/22/2025 |
| Room Thermometer | ONSET IN0046 | 10/22/2024 | 10/22/2025 |

REPORT NUMBER: SP1-2505-441-19-R2

## CIE 1931 Chromaticity Diagram




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

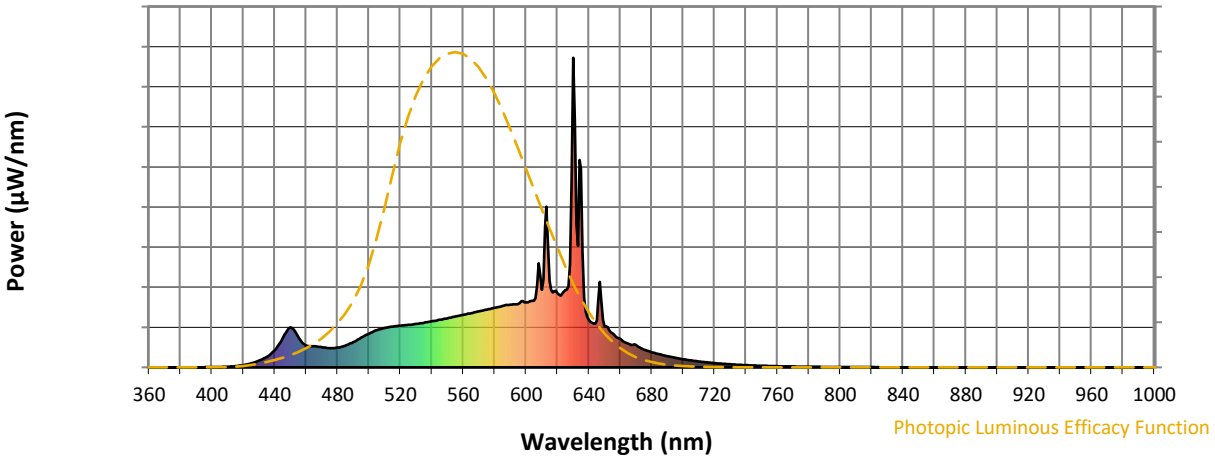



CCT = 2790K
CIE x = 0.4483
CIE y = 0.4008
Duv = -0.0026

Point lies inside the ANSI 2700K 4-step quadrangle

REPORT NUMBER: SP1-2505-441-19-R2

## Photopic Flux vs. Wavelength

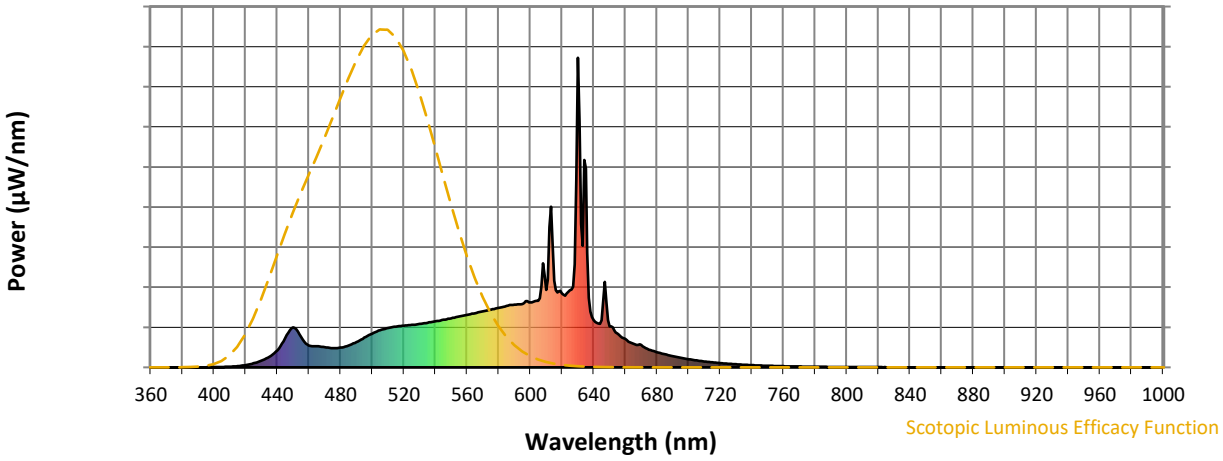



## Photopic Lumens: NR

| 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 | 81 | NR | 620 | 239 | NR | 750 | 5 | NR | 880 | 0 | NR |
| 365 | 0 | NR | 495 | 96 | NR | 625 | 249 | NR | 755 | 4 | NR | 885 | 0 | NR |
| 370 | 0 | NR | 500 | 109 | NR | 630 | 1000 | NR | 760 | 4 | NR | 890 | 0 | NR |
| 375 | 0 | NR | 505 | 120 | NR | 635 | 641 | NR | 765 | 3 | NR | 895 | 0 | NR |
| 380 | 0 | NR | 510 | 127 | NR | 640 | 153 | NR | 770 | 3 | NR | 900 | 0 | NR |
| 385 | 0 | NR | 515 | 131 | NR | 645 | 152 | NR | 775 | 2 | NR | 905 | 0 | NR |
| 390 | 0 | NR | 520 | 135 | NR | 650 | 132 | NR | 780 | 2 | NR | 910 | 0 | NR |
| 395 | 0 | NR | 525 | 137 | NR | 655 | 109 | NR | 785 | 2 | NR | 915 | 0 | NR |
| 400 | 1 | NR | 530 | 140 | NR | 660 | 92 | NR | 790 | 1 | NR | 920 | 0 | NR |
| 405 | 1 | NR | 535 | 144 | NR | 665 | 76 | NR | 795 | 1 | NR | 925 | 0 | NR |
| 410 | 2 | NR | 540 | 149 | NR | 670 | 72 | NR | 800 | 1 | NR | 930 | 0 | NR |
| 415 | 4 | NR | 545 | 154 | NR | 675 | 57 | NR | 805 | 1 | NR | 935 | 0 | NR |
| 420 | 7 | NR | 550 | 158 | NR | 680 | 49 | NR | 810 | 1 | NR | 940 | 0 | NR |
| 425 | 13 | NR | 555 | 164 | NR | 685 | 42 | NR | 815 | 1 | NR | 945 | 0 | NR |
| 430 | 22 | NR | 560 | 170 | NR | 690 | 36 | NR | 820 | 1 | NR | 950 | 0 | NR |
| 435 | 34 | NR | 565 | 175 | NR | 695 | 31 | NR | 825 | 1 | NR | 955 | 0 | NR |
| 440 | 55 | NR | 570 | 181 | NR | 700 | 26 | NR | 830 | 0 | NR | 960 | 0 | NR |
| 445 | 94 | NR | 575 | 186 | NR | 705 | 22 | NR | 835 | 0 | NR | 965 | 0 | NR |
| 450 | 129 | NR | 580 | 192 | NR | 710 | 19 | NR | 840 | 0 | NR | 970 | 0 | NR |
| 455 | 99 | NR | 585 | 198 | NR | 715 | 16 | NR | 845 | 0 | NR | 975 | 0 | NR |
| 460 | 71 | NR | 590 | 203 | NR | 720 | 14 | NR | 850 | 0 | NR | 980 | 0 | NR |
| 465 | 68 | NR | 595 | 204 | NR | 725 | 12 | NR | 855 | 0 | NR | 985 | 0 | NR |
| 470 | 65 | NR | 600 | 210 | NR | 730 | 10 | NR | 860 | 0 | NR | 990 | 0 | NR |
| 475 | 62 | NR | 605 | 216 | NR | 735 | 8 | NR | 865 | 0 | NR | 995 | 0 | NR |
| 480 | 64 | NR | 610 | 250 | NR | 740 | 7 | NR | 870 | 0 | NR | 1000 | 0 | NR |
| 485 | 71 | NR | 615 | 281 | NR | 745 | 6 | NR | 875 | 0 | NR | | | |

REPORT NUMBER: SP1-2505-441-19-R2

## Scotopic Flux vs. Wavelength

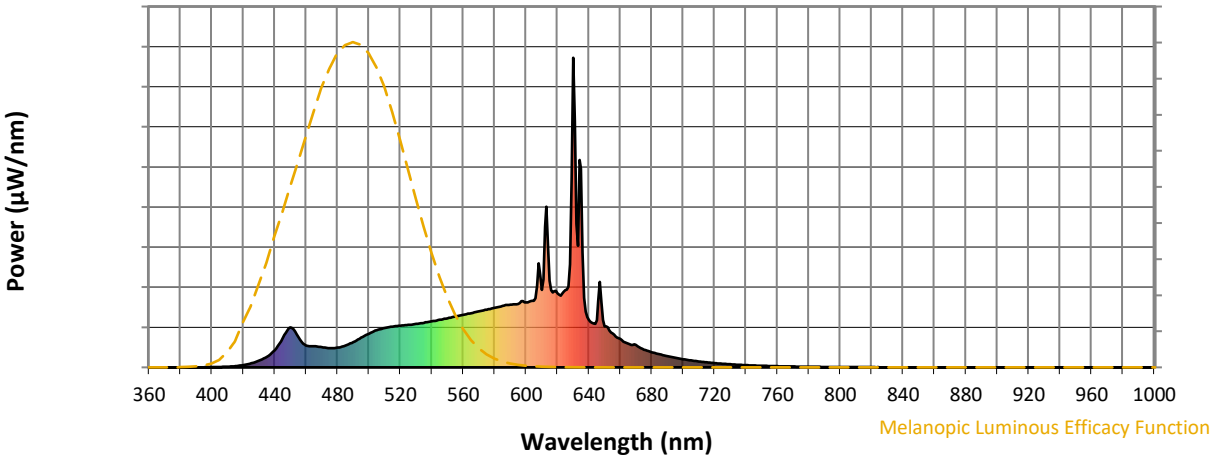



**Scotopic Lumens: NR** **S/P: 1.41**

| 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 | 81 | NR | 620 | 239 | NR | 750 | 5 | NR | 880 | 0 | NR |
| 365 | 0 | NR | 495 | 96 | NR | 625 | 249 | NR | 755 | 4 | NR | 885 | 0 | NR |
| 370 | 0 | NR | 500 | 109 | NR | 630 | 1000 | NR | 760 | 4 | NR | 890 | 0 | NR |
| 375 | 0 | NR | 505 | 120 | NR | 635 | 641 | NR | 765 | 3 | NR | 895 | 0 | NR |
| 380 | 0 | NR | 510 | 127 | NR | 640 | 153 | NR | 770 | 3 | NR | 900 | 0 | NR |
| 385 | 0 | NR | 515 | 131 | NR | 645 | 152 | NR | 775 | 2 | NR | 905 | 0 | NR |
| 390 | 0 | NR | 520 | 135 | NR | 650 | 132 | NR | 780 | 2 | NR | 910 | 0 | NR |
| 395 | 0 | NR | 525 | 137 | NR | 655 | 109 | NR | 785 | 2 | NR | 915 | 0 | NR |
| 400 | 1 | NR | 530 | 140 | NR | 660 | 92 | NR | 790 | 1 | NR | 920 | 0 | NR |
| 405 | 1 | NR | 535 | 144 | NR | 665 | 76 | NR | 795 | 1 | NR | 925 | 0 | NR |
| 410 | 2 | NR | 540 | 149 | NR | 670 | 72 | NR | 800 | 1 | NR | 930 | 0 | NR |
| 415 | 4 | NR | 545 | 154 | NR | 675 | 57 | NR | 805 | 1 | NR | 935 | 0 | NR |
| 420 | 7 | NR | 550 | 158 | NR | 680 | 49 | NR | 810 | 1 | NR | 940 | 0 | NR |
| 425 | 13 | NR | 555 | 164 | NR | 685 | 42 | NR | 815 | 1 | NR | 945 | 0 | NR |
| 430 | 22 | NR | 560 | 170 | NR | 690 | 36 | NR | 820 | 1 | NR | 950 | 0 | NR |
| 435 | 34 | NR | 565 | 175 | NR | 695 | 31 | NR | 825 | 1 | NR | 955 | 0 | NR |
| 440 | 55 | NR | 570 | 181 | NR | 700 | 26 | NR | 830 | 0 | NR | 960 | 0 | NR |
| 445 | 94 | NR | 575 | 186 | NR | 705 | 22 | NR | 835 | 0 | NR | 965 | 0 | NR |
| 450 | 129 | NR | 580 | 192 | NR | 710 | 19 | NR | 840 | 0 | NR | 970 | 0 | NR |
| 455 | 99 | NR | 585 | 198 | NR | 715 | 16 | NR | 845 | 0 | NR | 975 | 0 | NR |
| 460 | 71 | NR | 590 | 203 | NR | 720 | 14 | NR | 850 | 0 | NR | 980 | 0 | NR |
| 465 | 68 | NR | 595 | 204 | NR | 725 | 12 | NR | 855 | 0 | NR | 985 | 0 | NR |
| 470 | 65 | NR | 600 | 210 | NR | 730 | 10 | NR | 860 | 0 | NR | 990 | 0 | NR |
| 475 | 62 | NR | 605 | 216 | NR | 735 | 8 | NR | 865 | 0 | NR | 995 | 0 | NR |
| 480 | 64 | NR | 610 | 250 | NR | 740 | 7 | NR | 870 | 0 | NR | 1000 | 0 | NR |
| 485 | 71 | NR | 615 | 281 | NR | 745 | 6 | NR | 875 | 0 | NR | | | |

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## Melanopic Flux vs. Wavelength




**Melanopic Lumens: NR** **M/P: 2.77**

| 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 | 81 | NR | 620 | 239 | NR | 750 | 5 | NR | 880 | 0 | NR |
| 365 | 0 | NR | 495 | 96 | NR | 625 | 249 | NR | 755 | 4 | NR | 885 | 0 | NR |
| 370 | 0 | NR | 500 | 109 | NR | 630 | 1000 | NR | 760 | 4 | NR | 890 | 0 | NR |
| 375 | 0 | NR | 505 | 120 | NR | 635 | 641 | NR | 765 | 3 | NR | 895 | 0 | NR |
| 380 | 0 | NR | 510 | 127 | NR | 640 | 153 | NR | 770 | 3 | NR | 900 | 0 | NR |
| 385 | 0 | NR | 515 | 131 | NR | 645 | 152 | NR | 775 | 2 | NR | 905 | 0 | NR |
| 390 | 0 | NR | 520 | 135 | NR | 650 | 132 | NR | 780 | 2 | NR | 910 | 0 | NR |
| 395 | 0 | NR | 525 | 137 | NR | 655 | 109 | NR | 785 | 2 | NR | 915 | 0 | NR |
| 400 | 1 | NR | 530 | 140 | NR | 660 | 92 | NR | 790 | 1 | NR | 920 | 0 | NR |
| 405 | 1 | NR | 535 | 144 | NR | 665 | 76 | NR | 795 | 1 | NR | 925 | 0 | NR |
| 410 | 2 | NR | 540 | 149 | NR | 670 | 72 | NR | 800 | 1 | NR | 930 | 0 | NR |
| 415 | 4 | NR | 545 | 154 | NR | 675 | 57 | NR | 805 | 1 | NR | 935 | 0 | NR |
| 420 | 7 | NR | 550 | 158 | NR | 680 | 49 | NR | 810 | 1 | NR | 940 | 0 | NR |
| 425 | 13 | NR | 555 | 164 | NR | 685 | 42 | NR | 815 | 1 | NR | 945 | 0 | NR |
| 430 | 22 | NR | 560 | 170 | NR | 690 | 36 | NR | 820 | 1 | NR | 950 | 0 | NR |
| 435 | 34 | NR | 565 | 175 | NR | 695 | 31 | NR | 825 | 1 | NR | 955 | 0 | NR |
| 440 | 55 | NR | 570 | 181 | NR | 700 | 26 | NR | 830 | 0 | NR | 960 | 0 | NR |
| 445 | 94 | NR | 575 | 186 | NR | 705 | 22 | NR | 835 | 0 | NR | 965 | 0 | NR |
| 450 | 129 | NR | 580 | 192 | NR | 710 | 19 | NR | 840 | 0 | NR | 970 | 0 | NR |
| 455 | 99 | NR | 585 | 198 | NR | 715 | 16 | NR | 845 | 0 | NR | 975 | 0 | NR |
| 460 | 71 | NR | 590 | 203 | NR | 720 | 14 | NR | 850 | 0 | NR | 980 | 0 | NR |
| 465 | 68 | NR | 595 | 204 | NR | 725 | 12 | NR | 855 | 0 | NR | 985 | 0 | NR |
| 470 | 65 | NR | 600 | 210 | NR | 730 | 10 | NR | 860 | 0 | NR | 990 | 0 | NR |
| 475 | 62 | NR | 605 | 216 | NR | 735 | 8 | NR | 865 | 0 | NR | 995 | 0 | NR |
| 480 | 64 | NR | 610 | 250 | NR | 740 | 7 | NR | 870 | 0 | NR | 1000 | 0 | NR |
| 485 | 71 | NR | 615 | 281 | NR | 745 | 6 | NR | 875 | 0 | NR | | | |

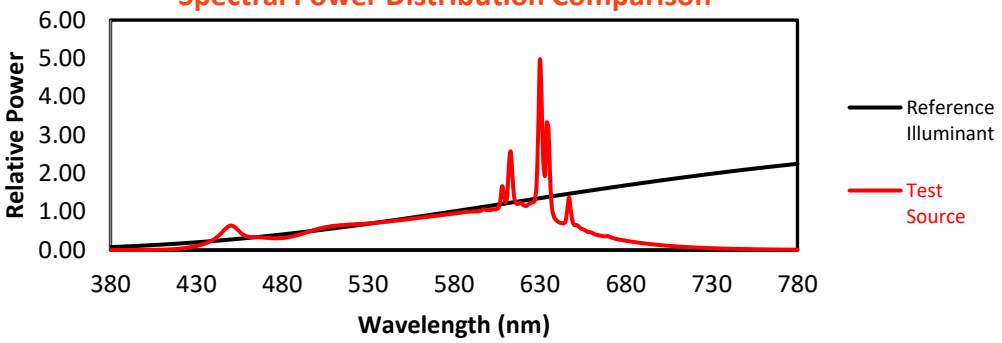
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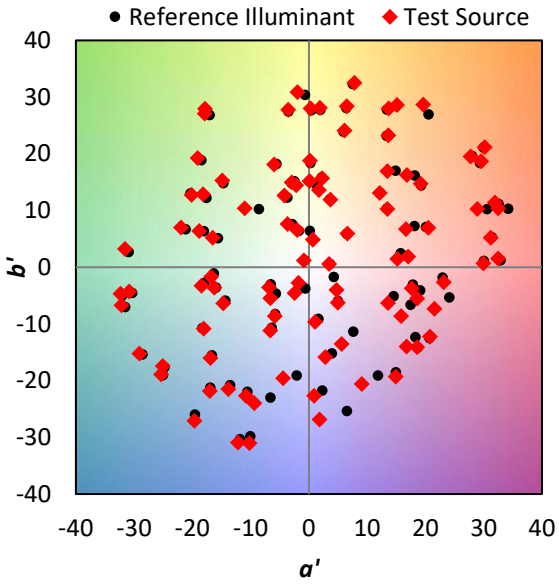
## Summary

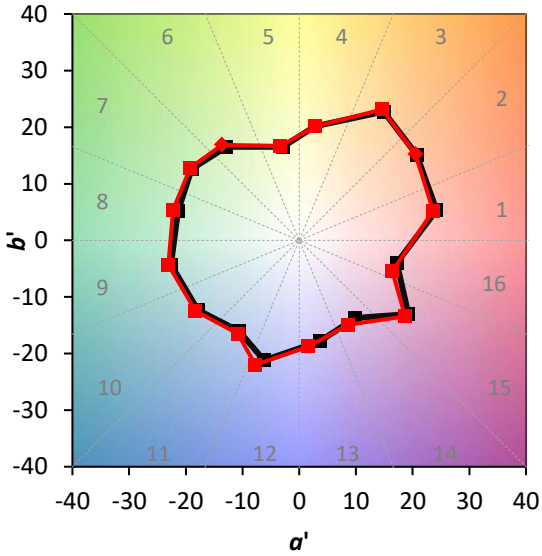
$R_f$ = 93.8
$R_g$ = 102.2
CIE $R_a$ = 95.1
$R_9$ = 82.2

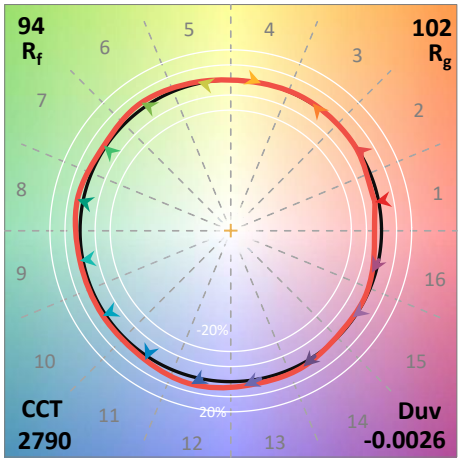
## Spectral Power Distribution Comparison

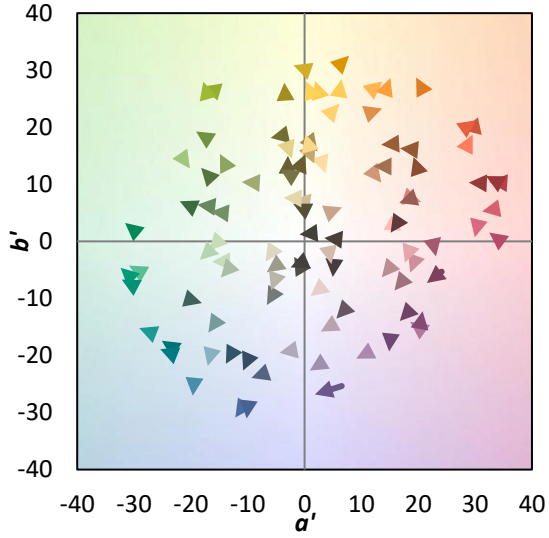



## Color Vector Graphics



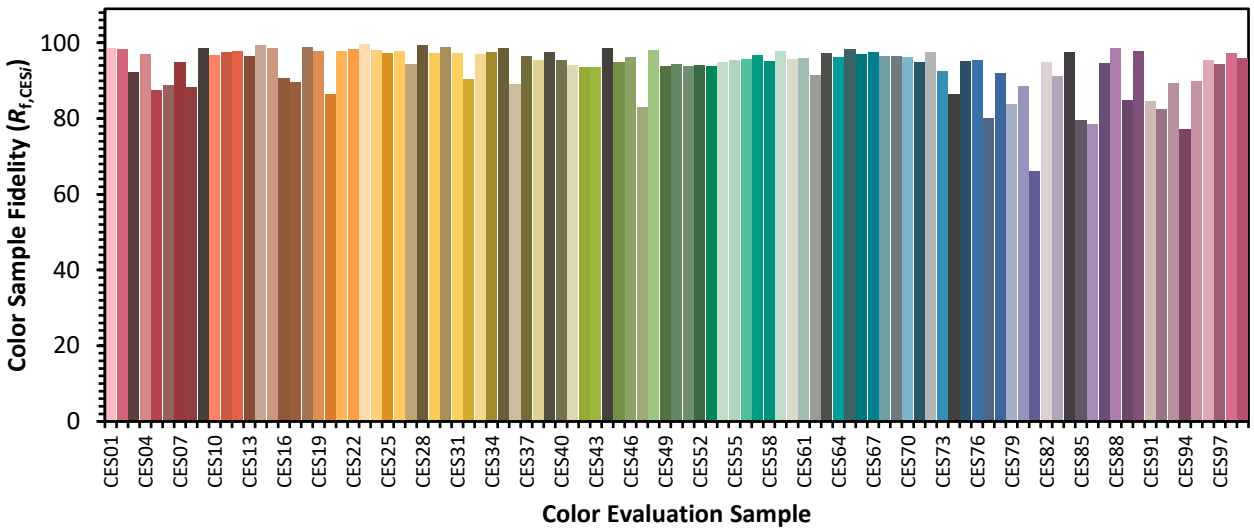



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**Individual Sample Fidelity Index ($R_{f,i}$)**

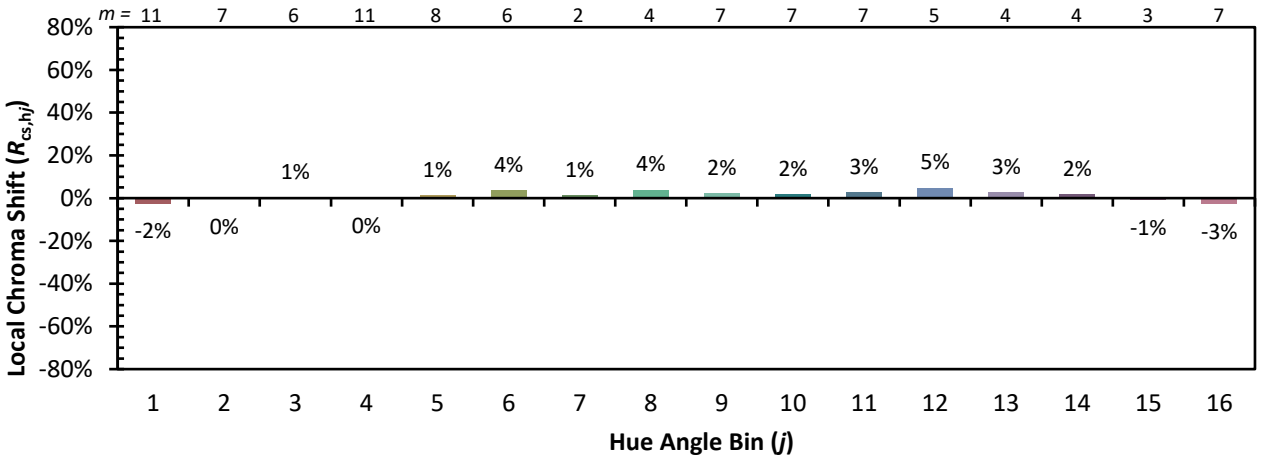
| | | | |
|---|---|---|---|
| CES01 = 86 | CES26 = 98 | CES51 = 94 | CES76 = 95 |
| CES02 = 64 | CES27 = 94 | CES52 = 94 | CES77 = 80 |
| CES03 = 32 | CES28 = 99 | CES53 = 94 | CES78 = 92 |
| CES04 = 70 | CES29 = 97 | CES54 = 95 | CES79 = 84 |
| CES05 = 51 | CES30 = 99 | CES55 = 95 | CES80 = 89 |
| CES06 = 51 | CES31 = 97 | CES56 = 96 | CES81 = 66 |
| CES07 = 45 | CES32 = 90 | CES57 = 97 | CES82 = 95 |
| CES08 = 43 | CES33 = 97 | CES58 = 95 | CES83 = 91 |
| CES09 = 29 | CES34 = 97 | CES59 = 98 | CES84 = 98 |
| CES10 = 77 | CES35 = 99 | CES60 = 96 | CES85 = 80 |
| CES11 = 59 | CES36 = 89 | CES61 = 96 | CES86 = 79 |
| CES12 = 66 | CES37 = 96 | CES62 = 91 | CES87 = 95 |
| CES13 = 45 | CES38 = 95 | CES63 = 97 | CES88 = 99 |
| CES14 = 74 | CES39 = 98 | CES64 = 96 | CES89 = 85 |
| CES15 = 72 | CES40 = 95 | CES65 = 98 | CES90 = 98 |
| CES16 = 48 | CES41 = 94 | CES66 = 97 | CES91 = 85 |
| CES17 = 50 | CES42 = 94 | CES67 = 97 | CES92 = 83 |
| CES18 = 57 | CES43 = 94 | CES68 = 96 | CES93 = 89 |
| CES19 = 72 | CES44 = 99 | CES69 = 96 | CES94 = 77 |
| CES20 = 68 | CES45 = 95 | CES70 = 96 | CES95 = 90 |
| CES21 = 86 | CES46 = 96 | CES71 = 95 | CES96 = 96 |
| CES22 = 79 | CES47 = 83 | CES72 = 98 | CES97 = 94 |
| CES23 = 92 | CES48 = 98 | CES73 = 93 | CES98 = 97 |
| CES24 = 90 | CES49 = 94 | CES74 = 86 | CES99 = 96 |
| CES25 = 72 | CES50 = 94 | CES75 = 95 | |

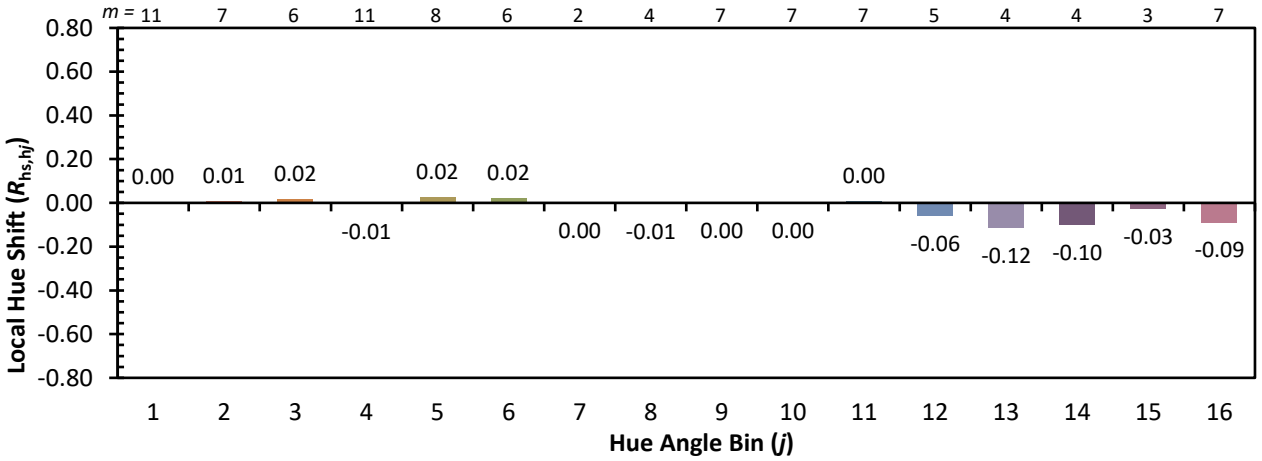


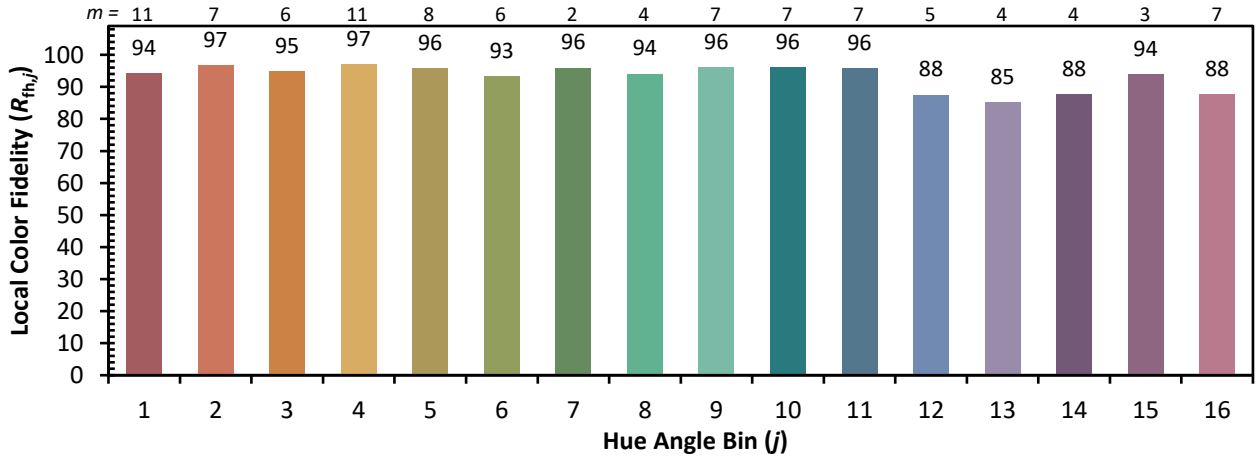
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## Color Rendition by Hue-Angle Bin



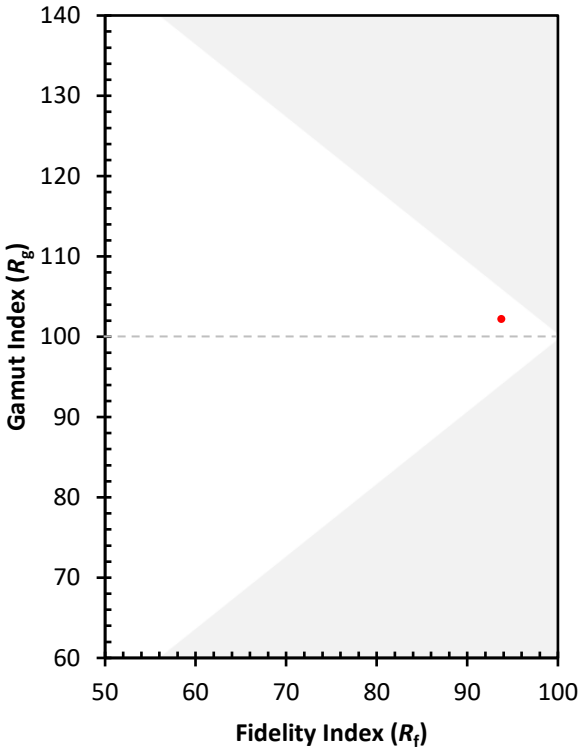



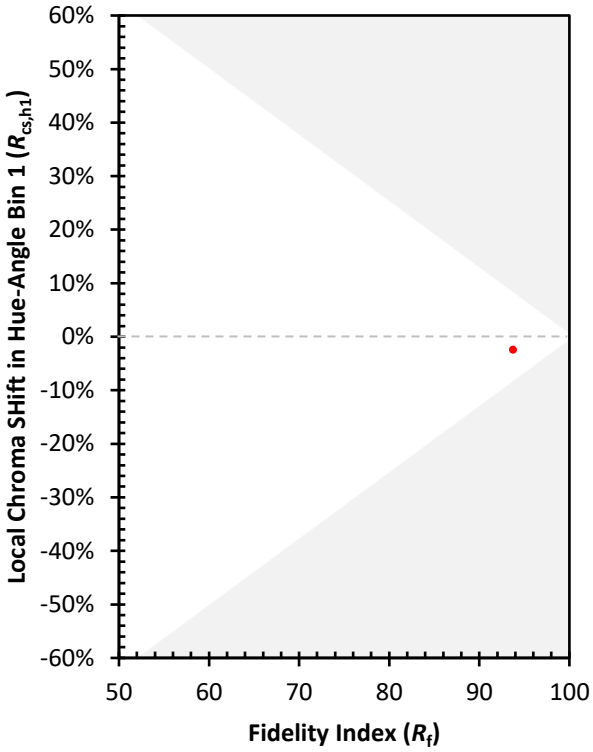



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### Measure Comparisons




(END OF REPORT)