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: P975506

Luminaire Tested: 24ENA-LD2-67-UNV-L935-CD1

Issue Date: 03/13/2025

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: | P975506 |
| Test Lab: | INNOVATION CENTER(P3) |
| Issue Date: | 03/13/2025 |
| Manufacturer: | COOPER LIGHTING SOLUTIONS |
| Product Line: | METALUX |
| Catalog Number: | 24ENA-LD2-67-UNV-L935-CD1 |
| Description: | METALUX ENCOUNTER 2x4 6700LM PACKAGE 90CRI 3500K AIR VENTED TROFFER |
| Light Source: | 3500K CCT, 90 CRI LEDS |
| Ballast/Driver: | - |

**Summary**

| | |
|---|---|
| Lumens per Lamp: | N/A |
| Luminaire Lumens: | 6430.7 lumens |
| Efficiency: | N/A |
| Efficacy: | 114.6 lumens/watt |
| Spacing Criteria (0/90/45): | 1.29 / 1.29 / 1.4 |
| Luminous Opening: | Rectangular (W 1.83' x L: 3.83' x H: 0') |
| CIE Type: | Direct |

| | |
|---|---|
| Input Watts (W): | 56.1 |
| 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: | 28.75 FT |

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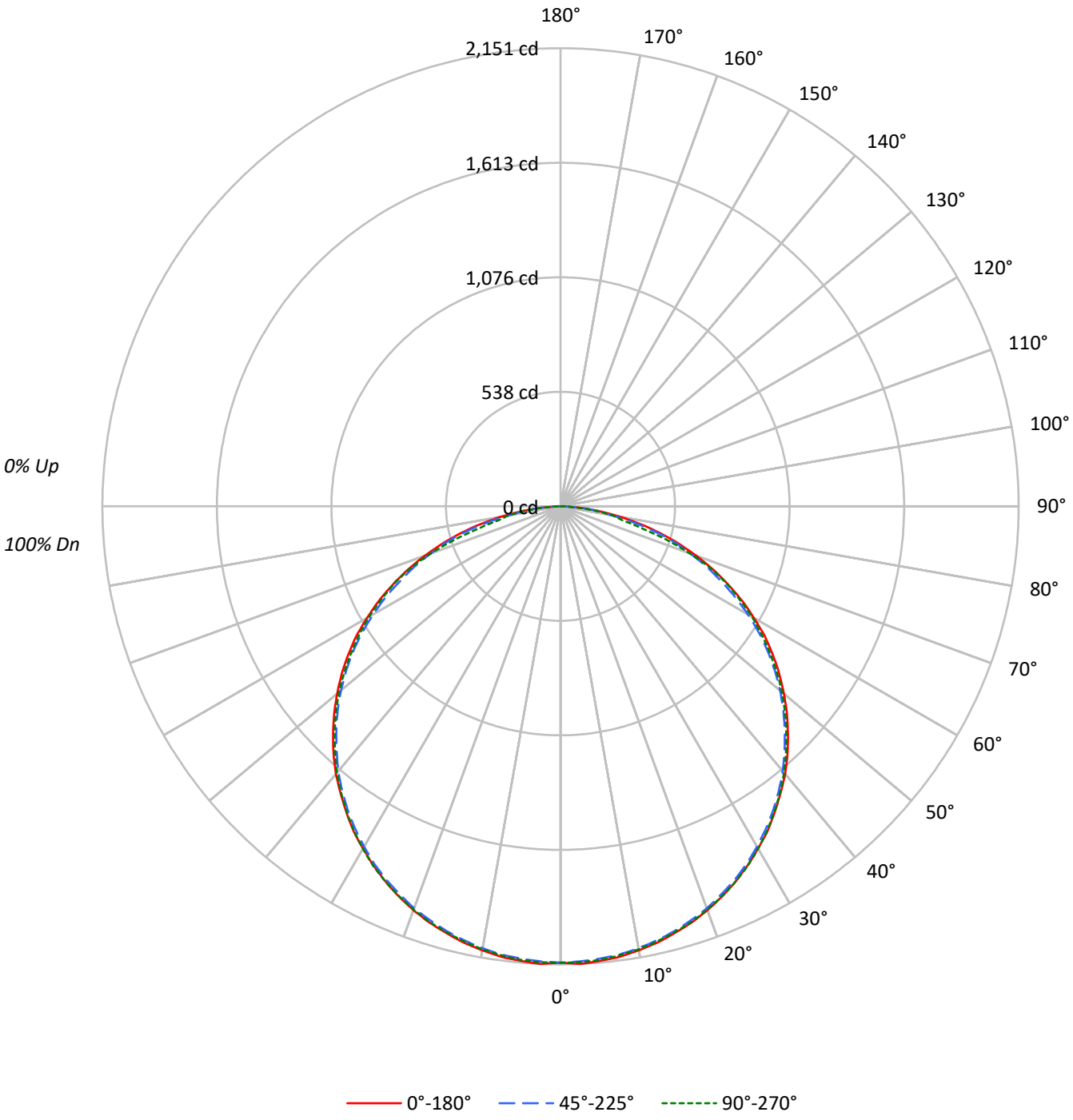
Scaled Data Report

TEST NUMBER: P975506
CATALOG NUMBER: 24ENA-LD2-67-UNV-L935-CD1

## Luminous Intensity Polar Plot



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Scaled Data Report

TEST NUMBER: P975506
CATALOG NUMBER: 24ENA-LD2-67-UNV-L935-CD1

## 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 | 109 | 104 | 99 | 95 | 106 | 101 | 97 | 94 | 97 | 94 | 91 | 93 | 90 | 88 | 90 | 87 | 85 | 83 |
| 2 | 98 | 90 | 83 | 77 | 96 | 88 | 82 | 76 | 84 | 79 | 74 | 81 | 77 | 73 | 78 | 74 | 71 | 69 |
| 3 | 90 | 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 | 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 | 35 | 29 | 25 | 23 |

## AVERAGE LUMINANCE (cd/sqm):

| | 0° | 45° | 90° |
|---|---|---|---|
| 0° | 3282 | 3282 | 3282 |
| 5° | 3295 | 3278 | 3287 |
| 10° | 3293 | 3277 | 3285 |
| 15° | 3290 | 3275 | 3283 |
| 20° | 3290 | 3274 | 3285 |
| 25° | 3286 | 3270 | 3286 |
| 30° | 3282 | 3263 | 3282 |
| 35° | 3279 | 3256 | 3273 |
| 40° | 3280 | 3245 | 3264 |
| 45° | 3271 | 3225 | 3248 |
| 50° | 3263 | 3205 | 3234 |
| 55° | 3251 | 3172 | 3204 |
| 60° | 3211 | 3112 | 3178 |
| 65° | 3146 | 3014 | 3126 |
| 70° | 3033 | 2906 | 2900 |
| 75° | 2854 | 2728 | 2306 |
| 80° | 2512 | 2134 | 2193 |
| 85° | 1982 | 1866 | 1726 |

## MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°
Vertical Angle: 45°
Luminance: 3271 cd/sqm

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Scaled Data Report

TEST NUMBER: P975506
CATALOG NUMBER: 24ENA-LD2-67-UNV-L935-CD1

**ZONAL LUMENS:**

| Zone | Lumens | % Fixture |
|---|---|---|
| 0°-10° | 203.0 | 3.2 |
| 10°-20° | 583.8 | 9.1 |
| 20°-30° | 893.3 | 13.9 |
| 30°-40° | 1091.9 | 17.0 |
| 40°-50° | 1153.9 | 17.9 |
| 50°-60° | 1069.1 | 16.6 |
| 60°-70° | 837.6 | 13.0 |
| 70°-80° | 473.5 | 7.4 |
| 80°-90° | 124.7 | 1.9 |
| 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° | 1680.1 | 26.1 |
| 0°-40° | 2772.0 | 43.1 |
| 0°-60° | 4994.9 | 77.7 |
| 0°-90° | 6430.7 | 100.0 |
| 90°-120° | 0.0 | 0.0 |
| 90°-150° | 0.0 | 0.0 |
| 90°-180° | 0.0 | 0.0 |
| 0°-180° | 6430.7 | 100.0 |

**CANDELA DISTRIBUTION:**

| | 0° | 22.5° | 45° | 67.5° | 90° | Flux |
|---|---|---|---|---|---|---|
| 0° | 2143 | 2143 | 2143 | 2143 | 2143 | |
| 5° | 2143 | 2136 | 2132 | 2131 | 2138 | 204 |
| 15° | 2074 | 2066 | 2065 | 2064 | 2070 | 586 |
| 25° | 1944 | 1936 | 1935 | 1935 | 1944 | 896 |
| 35° | 1753 | 1745 | 1741 | 1741 | 1751 | 1098 |
| 45° | 1510 | 1500 | 1489 | 1489 | 1500 | 1165 |
| 55° | 1217 | 1204 | 1188 | 1190 | 1200 | 1087 |
| 65° | 868 | 852 | 832 | 842 | 862 | 858 |
| 75° | 482 | 469 | 461 | 411 | 390 | 507 |
| 85° | 113 | 106 | 106 | 101 | 98 | 133 |
| 90° | 0 | 0 | 0 | 0 | 0 | |

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Scaled Data Report

TEST NUMBER: P975506
CATALOG NUMBER: 24ENA-LD2-67-UNV-L935-CD1

**CANDELA DISTRIBUTION (FULL):**

| | 0° | 22.5° | 45° | 67.5° | 90° |
|---|---|---|---|---|---|
| 0° | *2143.0* | 2143.0 | 2143.0 | 2143.0 | 2143.0 |
| 2.5° | *2151.1* | *2141.8* | *2139.0* | *2136.5* | *2143.0* |
| 5° | *2143.0* | 2136.5 | 2132.2 | 2131.0 | 2137.7 |
| 7.5° | *2133.7* | 2125.7 | 2122.9 | 2120.2 | 2126.9 |
| 10° | *2117.6* | 2109.6 | 2106.8 | 2105.4 | 2112.1 |
| 12.5° | *2098.8* | 2089.3 | 2088.0 | 2086.7 | 2093.3 |
| 15° | *2074.5* | 2066.4 | 2065.2 | 2063.9 | 2070.4 |
| 17.5° | *2049.1* | 2041.0 | 2038.3 | 2037.0 | 2046.3 |
| 20° | *2018.2* | 2010.1 | 2008.7 | 2007.4 | 2015.4 |
| 22.5° | *1983.3* | 1975.2 | 1972.5 | 1973.7 | 1981.8 |
| 25° | *1944.3* | 1936.1 | 1934.8 | 1934.8 | 1944.3 |
| 27.5° | *1901.2* | 1893.1 | 1893.1 | 1893.1 | 1903.9 |
| 30° | *1855.7* | 1848.9 | 1844.9 | 1846.1 | 1855.7 |
| 32.5° | *1808.5* | 1797.7 | 1795.1 | 1796.4 | 1805.9 |
| 35° | *1753.4* | 1745.4 | 1741.4 | 1741.4 | 1750.7 |
| 37.5° | *1696.9* | 1688.9 | 1683.6 | 1683.6 | 1692.9 |
| 40° | *1640.7* | 1628.4 | 1623.1 | 1620.3 | 1632.6 |
| 42.5° | *1577.4* | 1568.1 | 1556.0 | 1556.0 | 1566.6 |
| 45° | *1510.3* | 1499.5 | 1488.7 | 1488.7 | 1499.5 |
| 47.5° | *1441.7* | 1430.9 | 1418.9 | 1418.9 | 1429.7 |
| 50° | *1369.2* | 1358.4 | 1345.0 | 1345.0 | 1357.1 |
| 52.5° | *1295.3* | 1283.2 | 1268.4 | 1266.9 | 1279.2 |
| 55° | *1217.4* | 1203.9 | 1187.8 | 1190.5 | 1199.9 |
| 57.5° | *1138.1* | 1120.5 | 1104.4 | 1104.4 | 1119.2 |
| 60° | *1048.1* | 1033.3 | 1015.8 | 1018.5 | 1037.3 |
| 62.5° | *962.0* | 943.2 | 925.8 | 932.4 | 948.7 |
| 65° | *868.0* | 852.0 | 831.6 | 842.4 | 862.5 |
| 67.5° | *775.4* | 757.8 | 741.7 | 755.0 | 764.6 |
| 70° | *677.2* | 661.1 | 649.0 | 649.0 | 647.5 |
| 72.5° | *579.2* | 564.4 | 561.6 | 536.0 | 519.9 |
| 75° | *482.3* | 468.9 | 460.9 | 411.2 | 389.6 |
| 77.5° | *381.5* | 377.5 | 352.1 | 299.6 | 292.9 |
| 80° | *284.8* | 287.6 | 241.9 | 243.1 | 248.6 |
| 82.5° | *196.2* | 192.1 | 181.4 | 173.3 | 170.6 |
| 85° | *112.8* | 106.2 | 106.2 | 100.7 | 98.2 |
| 87.5° | *37.7* | 41.7 | 41.7 | 41.7 | 43.0 |
| 90° | *0.0* | 0.0 | 0.0 | 0.0 | 0.0 |

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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: SP1-2506-457-2

Test Date: 07/10/2025

Luminaire Tested: 14EN-LD2-51-UNV-L935-CD1-U

Data in this report applies to families of products including 14EN-LD2-51-UNV-L935-CD1-U

Report Generated By FNC07603 / LDUCLS01DT446
Version: v7.04

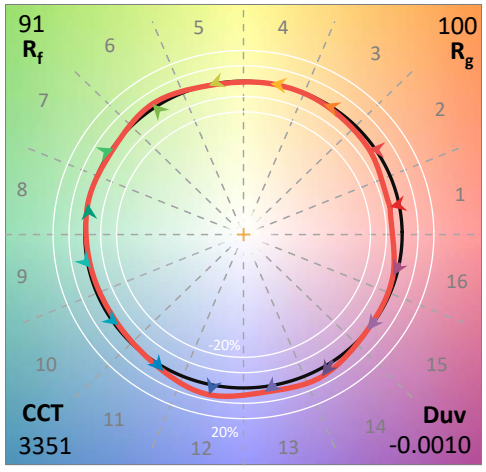
## Test Information

| | |
|---|---|
| Test Method: | LM-79-2019 |
| Report Number: | SP1-2506-457-2 |
| Test Lab: | COOPER LIGHTING SOLUTIONS |
| Photometer: | SP1 - 76IN SPHERE |
| Measurement Geometry: | 4π |
| Issue Date: | 07/15/2025 |
| Manufacturer: | COOPER LIGHTING SOLUTIONS |
| Product Line: | Metalux |
| Catalog Number: | **14EN-LD2-51-UNV-L935-CD1-U** |
| Description: | 1x4 ENCOUNTER 5100LM WITH LIGHTNING BOARDS |

## Spectral Parameters

| | |
|---|---|
| CCT (K): | 3351 |
| CIE u': | 0.2401 |
| CIE v': | 0.5129 |
| Duv: | -0.0010 |
| CIE x: | 0.4127 |
| CIE y: | 0.3919 |
| CIE z: | 0.1954 |
| Peak Wavelength (nm): | 630 |
| Dominant Wavelength (nm): | 581 |
| Purity: | 41.49069 |
| Rf: | 91.3 |
| Rg: | 99.9 |

| | |
|---|---|
| CRI (Ra): | 93.4 |
| R1: | 94.4 |
| R2: | 96.7 |
| R3: | 97.5 |
| R4: | 94.5 |
| R5: | 94.2 |
| R6: | 95.5 |
| R7: | 91.8 |
| R8: | 82.4 |
| R9: | 57.9 |
| R10: | 91.0 |
| R11: | 95.6 |
| R12: | 80.9 |
| R13: | 95.0 |
| R14: | 97.9 |
| R15: | 90.2 |




## Test Conditions

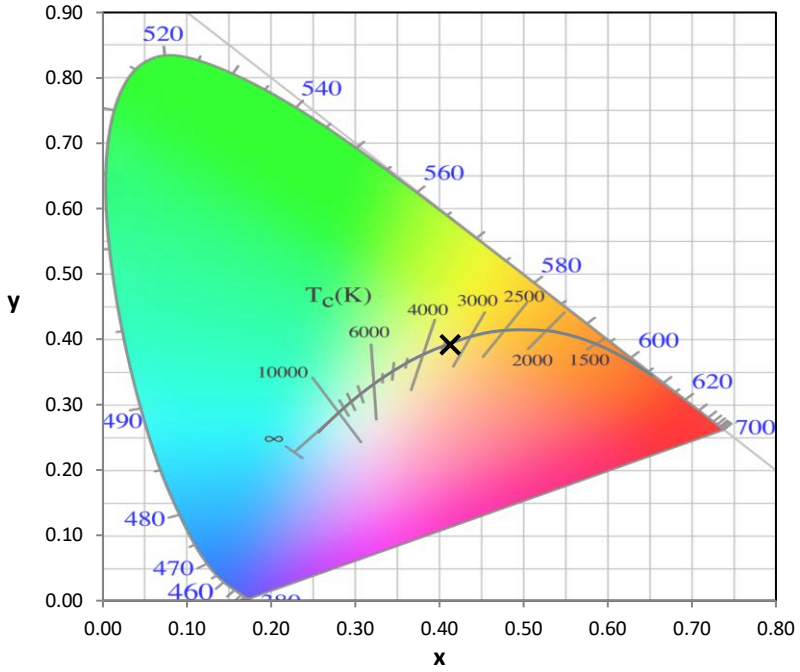
| | |
|---|---|
| Stabilization Time: | 28M |
| Operation Time: | 1H 28M |
| Sphere Temperature (°C): | 24.0 |

REPORT NUMBER: SP1-2506-457-2

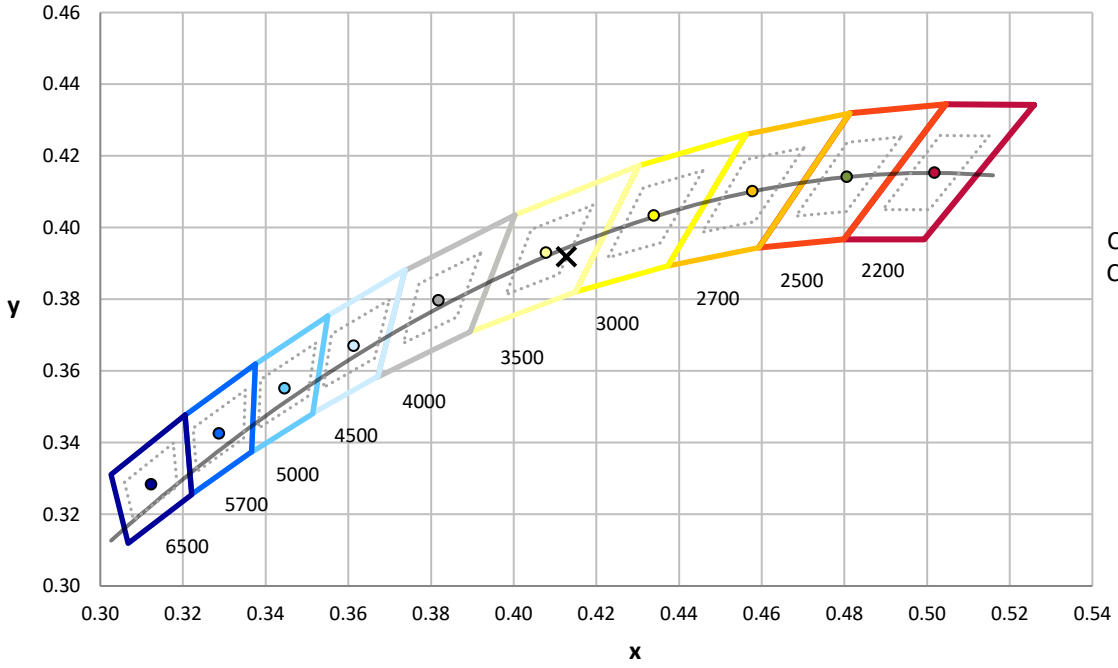
| Measurement and Test Equipment | | | |
|---|---|---|---|
| Instrument | Identification Number | Calibration Date | Calibration Due Date |
| Photometer | 76INCH SPHERE IN0058 | 6/16/2025 | 12/16/2025 |
| Power Meter | XITRON INXT2011004 | 1/21/2025 | 1/21/2026 |
| AC Power Source | CHROMA 61603 IN0063 | 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: SP1-2506-457-2

## CIE 1931 Chromaticity Diagram




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

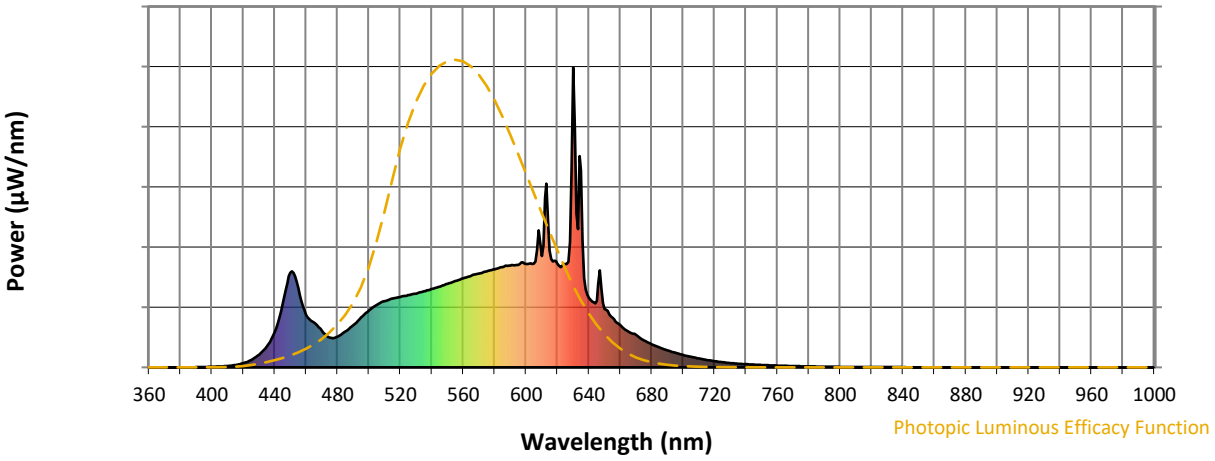



CCT = 3351K
CIE x = 0.4127
CIE y = 0.3919
Duv = -0.0010

Point lies inside the ANSI 3500K 4-step quadrangle

REPORT NUMBER: SP1-2506-457-2

## Photopic Flux vs. Wavelength

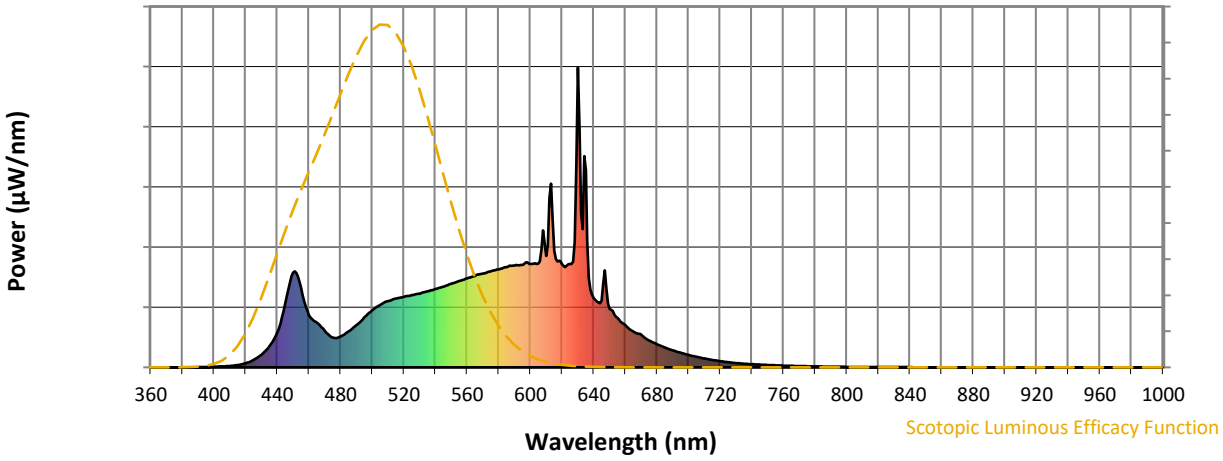



## Photopic Lumens: NR

| 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 | 140 | NR | 620 | 345 | NR | 750 | 8 | NR | 880 | 0 | NR |
| 365 | 0 | NR | 495 | 166 | NR | 625 | 344 | NR | 755 | 7 | NR | 885 | 0 | NR |
| 370 | 0 | NR | 500 | 190 | NR | 630 | 1000 | NR | 760 | 6 | NR | 890 | 0 | NR |
| 375 | 0 | NR | 505 | 208 | NR | 635 | 658 | NR | 765 | 5 | NR | 895 | 0 | NR |
| 380 | 0 | NR | 510 | 221 | NR | 640 | 232 | NR | 770 | 4 | NR | 900 | 0 | NR |
| 385 | 0 | NR | 515 | 230 | NR | 645 | 222 | NR | 775 | 4 | NR | 905 | 0 | NR |
| 390 | 1 | NR | 520 | 235 | NR | 650 | 194 | NR | 780 | 3 | NR | 910 | 0 | NR |
| 395 | 1 | NR | 525 | 241 | NR | 655 | 165 | NR | 785 | 3 | NR | 915 | 0 | NR |
| 400 | 2 | NR | 530 | 246 | NR | 660 | 141 | NR | 790 | 2 | NR | 920 | 0 | NR |
| 405 | 3 | NR | 535 | 254 | NR | 665 | 120 | NR | 795 | 2 | NR | 925 | 0 | NR |
| 410 | 5 | NR | 540 | 262 | NR | 670 | 109 | NR | 800 | 2 | NR | 930 | 0 | NR |
| 415 | 8 | NR | 545 | 269 | NR | 675 | 90 | NR | 805 | 1 | NR | 935 | 0 | NR |
| 420 | 14 | NR | 550 | 279 | NR | 680 | 77 | NR | 810 | 1 | NR | 940 | 0 | NR |
| 425 | 25 | NR | 555 | 288 | NR | 685 | 66 | NR | 815 | 1 | NR | 945 | 0 | NR |
| 430 | 42 | NR | 560 | 297 | NR | 690 | 57 | NR | 820 | 1 | NR | 950 | 0 | NR |
| 435 | 71 | NR | 565 | 305 | NR | 695 | 49 | NR | 825 | 1 | NR | 955 | 0 | NR |
| 440 | 117 | NR | 570 | 313 | NR | 700 | 42 | NR | 830 | 1 | NR | 960 | 0 | NR |
| 445 | 211 | NR | 575 | 320 | NR | 705 | 35 | NR | 835 | 1 | NR | 965 | 0 | NR |
| 450 | 316 | NR | 580 | 327 | NR | 710 | 30 | NR | 840 | 1 | NR | 970 | 0 | NR |
| 455 | 265 | NR | 585 | 334 | NR | 715 | 25 | NR | 845 | 1 | NR | 975 | 0 | NR |
| 460 | 175 | NR | 590 | 340 | NR | 720 | 21 | NR | 850 | 0 | NR | 980 | 0 | NR |
| 465 | 149 | NR | 595 | 342 | NR | 725 | 17 | NR | 855 | 0 | NR | 985 | 0 | NR |
| 470 | 122 | NR | 600 | 345 | NR | 730 | 14 | NR | 860 | 0 | NR | 990 | 0 | NR |
| 475 | 99 | NR | 605 | 346 | NR | 735 | 12 | NR | 865 | 0 | NR | 995 | 0 | NR |
| 480 | 103 | NR | 610 | 371 | NR | 740 | 11 | NR | 870 | 0 | NR | 1000 | 0 | NR |
| 485 | 120 | NR | 615 | 390 | NR | 745 | 9 | NR | 875 | 0 | NR | | | |

REPORT NUMBER: SP1-2506-457-2

## Scotopic Flux vs. Wavelength

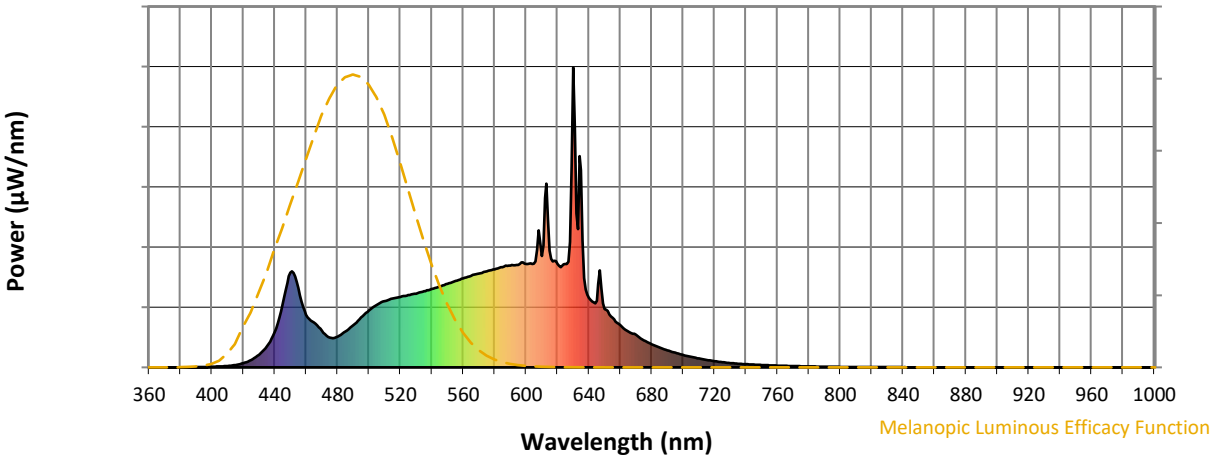



**Scotopic Lumens: NR** **S/P: 1.57**

| 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 | 140 | NR | 620 | 345 | NR | 750 | 8 | NR | 880 | 0 | NR |
| 365 | 0 | NR | 495 | 166 | NR | 625 | 344 | NR | 755 | 7 | NR | 885 | 0 | NR |
| 370 | 0 | NR | 500 | 190 | NR | 630 | 1000 | NR | 760 | 6 | NR | 890 | 0 | NR |
| 375 | 0 | NR | 505 | 208 | NR | 635 | 658 | NR | 765 | 5 | NR | 895 | 0 | NR |
| 380 | 0 | NR | 510 | 221 | NR | 640 | 232 | NR | 770 | 4 | NR | 900 | 0 | NR |
| 385 | 0 | NR | 515 | 230 | NR | 645 | 222 | NR | 775 | 4 | NR | 905 | 0 | NR |
| 390 | 1 | NR | 520 | 235 | NR | 650 | 194 | NR | 780 | 3 | NR | 910 | 0 | NR |
| 395 | 1 | NR | 525 | 241 | NR | 655 | 165 | NR | 785 | 3 | NR | 915 | 0 | NR |
| 400 | 2 | NR | 530 | 246 | NR | 660 | 141 | NR | 790 | 2 | NR | 920 | 0 | NR |
| 405 | 3 | NR | 535 | 254 | NR | 665 | 120 | NR | 795 | 2 | NR | 925 | 0 | NR |
| 410 | 5 | NR | 540 | 262 | NR | 670 | 109 | NR | 800 | 2 | NR | 930 | 0 | NR |
| 415 | 8 | NR | 545 | 269 | NR | 675 | 90 | NR | 805 | 1 | NR | 935 | 0 | NR |
| 420 | 14 | NR | 550 | 279 | NR | 680 | 77 | NR | 810 | 1 | NR | 940 | 0 | NR |
| 425 | 25 | NR | 555 | 288 | NR | 685 | 66 | NR | 815 | 1 | NR | 945 | 0 | NR |
| 430 | 42 | NR | 560 | 297 | NR | 690 | 57 | NR | 820 | 1 | NR | 950 | 0 | NR |
| 435 | 71 | NR | 565 | 305 | NR | 695 | 49 | NR | 825 | 1 | NR | 955 | 0 | NR |
| 440 | 117 | NR | 570 | 313 | NR | 700 | 42 | NR | 830 | 1 | NR | 960 | 0 | NR |
| 445 | 211 | NR | 575 | 320 | NR | 705 | 35 | NR | 835 | 1 | NR | 965 | 0 | NR |
| 450 | 316 | NR | 580 | 327 | NR | 710 | 30 | NR | 840 | 1 | NR | 970 | 0 | NR |
| 455 | 265 | NR | 585 | 334 | NR | 715 | 25 | NR | 845 | 1 | NR | 975 | 0 | NR |
| 460 | 175 | NR | 590 | 340 | NR | 720 | 21 | NR | 850 | 0 | NR | 980 | 0 | NR |
| 465 | 149 | NR | 595 | 342 | NR | 725 | 17 | NR | 855 | 0 | NR | 985 | 0 | NR |
| 470 | 122 | NR | 600 | 345 | NR | 730 | 14 | NR | 860 | 0 | NR | 990 | 0 | NR |
| 475 | 99 | NR | 605 | 346 | NR | 735 | 12 | NR | 865 | 0 | NR | 995 | 0 | NR |
| 480 | 103 | NR | 610 | 371 | NR | 740 | 11 | NR | 870 | 0 | NR | 1000 | 0 | NR |
| 485 | 120 | NR | 615 | 390 | NR | 745 | 9 | NR | 875 | 0 | NR | | | |

REPORT NUMBER: SP1-2506-457-2

## Melanopic Flux vs. Wavelength




**Melanopic Lumens: NR** **M/P: 3.16**

| 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 | 140 | NR | 620 | 345 | NR | 750 | 8 | NR | 880 | 0 | NR |
| 365 | 0 | NR | 495 | 166 | NR | 625 | 344 | NR | 755 | 7 | NR | 885 | 0 | NR |
| 370 | 0 | NR | 500 | 190 | NR | 630 | 1000 | NR | 760 | 6 | NR | 890 | 0 | NR |
| 375 | 0 | NR | 505 | 208 | NR | 635 | 658 | NR | 765 | 5 | NR | 895 | 0 | NR |
| 380 | 0 | NR | 510 | 221 | NR | 640 | 232 | NR | 770 | 4 | NR | 900 | 0 | NR |
| 385 | 0 | NR | 515 | 230 | NR | 645 | 222 | NR | 775 | 4 | NR | 905 | 0 | NR |
| 390 | 1 | NR | 520 | 235 | NR | 650 | 194 | NR | 780 | 3 | NR | 910 | 0 | NR |
| 395 | 1 | NR | 525 | 241 | NR | 655 | 165 | NR | 785 | 3 | NR | 915 | 0 | NR |
| 400 | 2 | NR | 530 | 246 | NR | 660 | 141 | NR | 790 | 2 | NR | 920 | 0 | NR |
| 405 | 3 | NR | 535 | 254 | NR | 665 | 120 | NR | 795 | 2 | NR | 925 | 0 | NR |
| 410 | 5 | NR | 540 | 262 | NR | 670 | 109 | NR | 800 | 2 | NR | 930 | 0 | NR |
| 415 | 8 | NR | 545 | 269 | NR | 675 | 90 | NR | 805 | 1 | NR | 935 | 0 | NR |
| 420 | 14 | NR | 550 | 279 | NR | 680 | 77 | NR | 810 | 1 | NR | 940 | 0 | NR |
| 425 | 25 | NR | 555 | 288 | NR | 685 | 66 | NR | 815 | 1 | NR | 945 | 0 | NR |
| 430 | 42 | NR | 560 | 297 | NR | 690 | 57 | NR | 820 | 1 | NR | 950 | 0 | NR |
| 435 | 71 | NR | 565 | 305 | NR | 695 | 49 | NR | 825 | 1 | NR | 955 | 0 | NR |
| 440 | 117 | NR | 570 | 313 | NR | 700 | 42 | NR | 830 | 1 | NR | 960 | 0 | NR |
| 445 | 211 | NR | 575 | 320 | NR | 705 | 35 | NR | 835 | 1 | NR | 965 | 0 | NR |
| 450 | 316 | NR | 580 | 327 | NR | 710 | 30 | NR | 840 | 1 | NR | 970 | 0 | NR |
| 455 | 265 | NR | 585 | 334 | NR | 715 | 25 | NR | 845 | 1 | NR | 975 | 0 | NR |
| 460 | 175 | NR | 590 | 340 | NR | 720 | 21 | NR | 850 | 0 | NR | 980 | 0 | NR |
| 465 | 149 | NR | 595 | 342 | NR | 725 | 17 | NR | 855 | 0 | NR | 985 | 0 | NR |
| 470 | 122 | NR | 600 | 345 | NR | 730 | 14 | NR | 860 | 0 | NR | 990 | 0 | NR |
| 475 | 99 | NR | 605 | 346 | NR | 735 | 12 | NR | 865 | 0 | NR | 995 | 0 | NR |
| 480 | 103 | NR | 610 | 371 | NR | 740 | 11 | NR | 870 | 0 | NR | 1000 | 0 | NR |
| 485 | 120 | NR | 615 | 390 | NR | 745 | 9 | NR | 875 | 0 | NR | | | |

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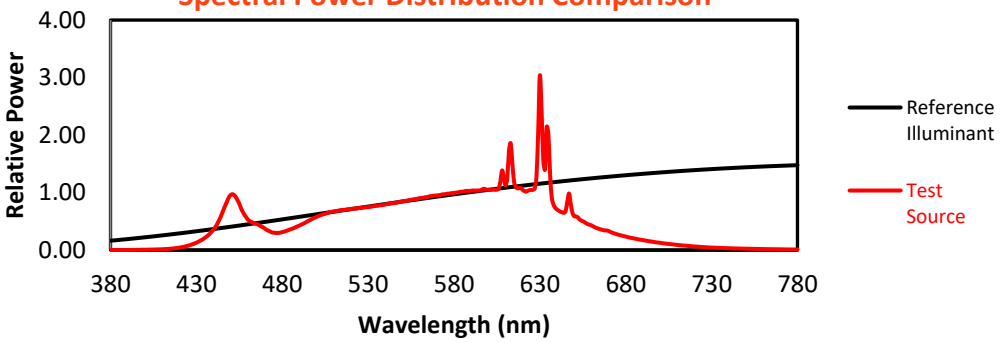
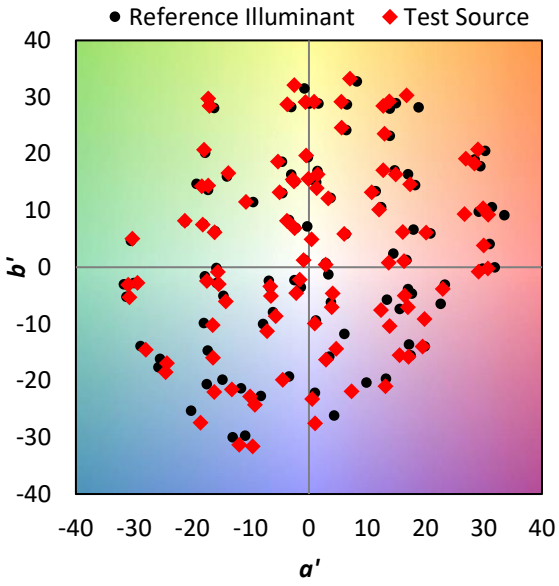
## Summary

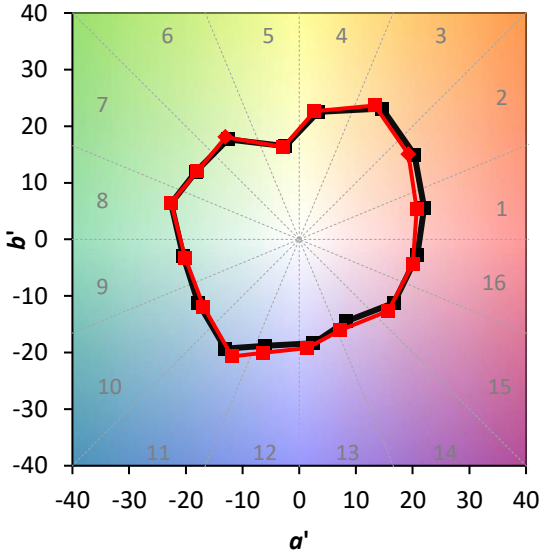
$R_f$ = 91.3
$R_g$ = 99.9
CIE $R_a$ = 93.4
$R_9$ = 57.9

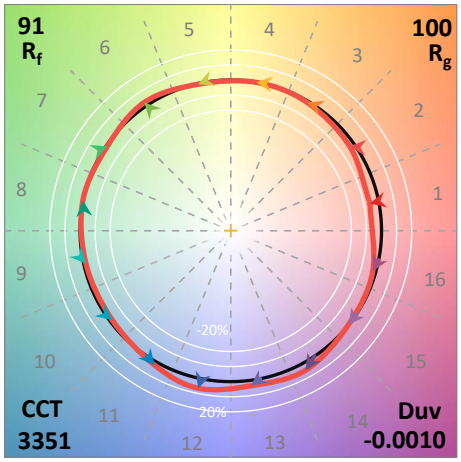
## Spectral Power Distribution Comparison

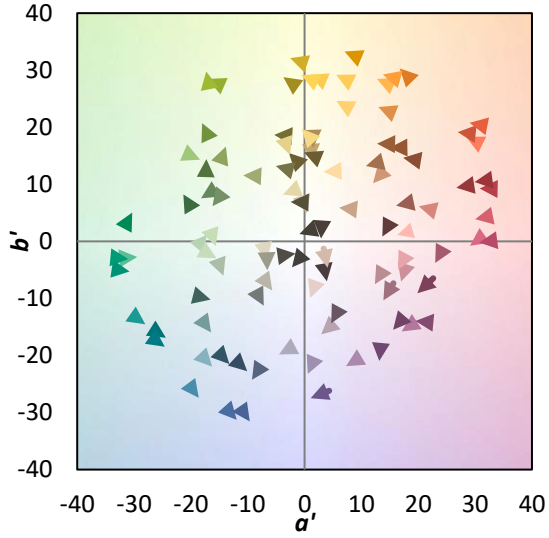



## Color Vector Graphics



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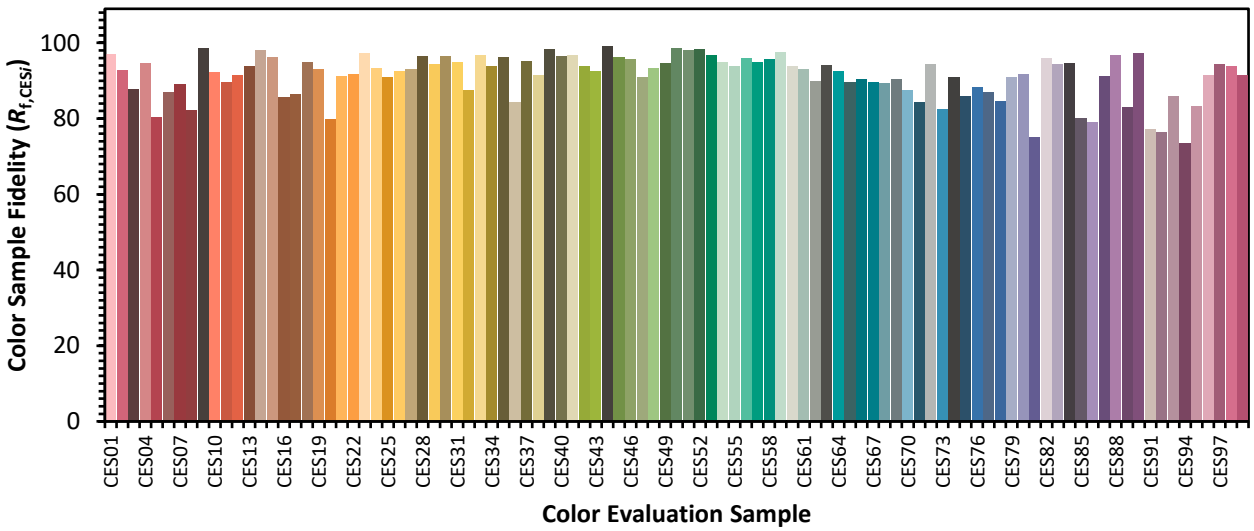
**Individual Sample Fidelity Index ($R_{f,i}$)**

| | | | |
|---|---|---|---|
| CES01 = 86 | CES26 = 93 | CES51 = 98 | CES76 = 88 |
| CES02 = 63 | CES27 = 93 | CES52 = 98 | CES77 = 87 |
| CES03 = 31 | CES28 = 96 | CES53 = 97 | CES78 = 85 |
| CES04 = 70 | CES29 = 95 | CES54 = 95 | CES79 = 91 |
| CES05 = 50 | CES30 = 96 | CES55 = 94 | CES80 = 92 |
| CES06 = 51 | CES31 = 95 | CES56 = 96 | CES81 = 75 |
| CES07 = 43 | CES32 = 87 | CES57 = 95 | CES82 = 96 |
| CES08 = 41 | CES33 = 97 | CES58 = 96 | CES83 = 94 |
| CES09 = 29 | CES34 = 94 | CES59 = 97 | CES84 = 95 |
| CES10 = 75 | CES35 = 96 | CES60 = 94 | CES85 = 80 |
| CES11 = 58 | CES36 = 84 | CES61 = 93 | CES86 = 79 |
| CES12 = 64 | CES37 = 95 | CES62 = 90 | CES87 = 91 |
| CES13 = 44 | CES38 = 91 | CES63 = 94 | CES88 = 97 |
| CES14 = 74 | CES39 = 98 | CES64 = 92 | CES89 = 83 |
| CES15 = 72 | CES40 = 96 | CES65 = 90 | CES90 = 97 |
| CES16 = 48 | CES41 = 97 | CES66 = 91 | CES91 = 77 |
| CES17 = 49 | CES42 = 94 | CES67 = 90 | CES92 = 76 |
| CES18 = 56 | CES43 = 93 | CES68 = 89 | CES93 = 86 |
| CES19 = 71 | CES44 = 99 | CES69 = 91 | CES94 = 73 |
| CES20 = 67 | CES45 = 96 | CES70 = 87 | CES95 = 83 |
| CES21 = 86 | CES46 = 96 | CES71 = 84 | CES96 = 91 |
| CES22 = 78 | CES47 = 91 | CES72 = 94 | CES97 = 95 |
| CES23 = 91 | CES48 = 93 | CES73 = 82 | CES98 = 94 |
| CES24 = 90 | CES49 = 95 | CES74 = 91 | CES99 = 91 |
| CES25 = 71 | CES50 = 99 | CES75 = 86 | |



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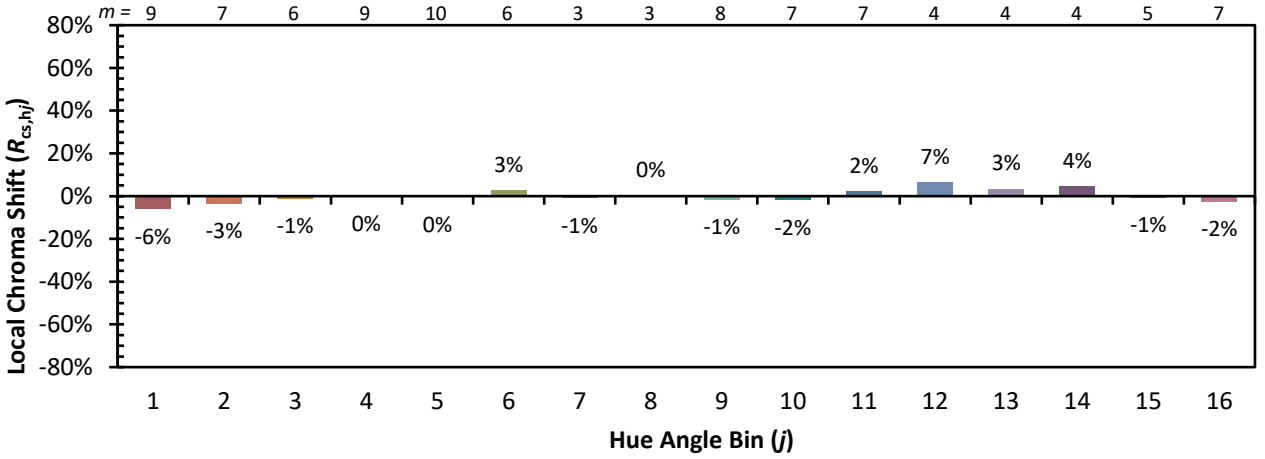
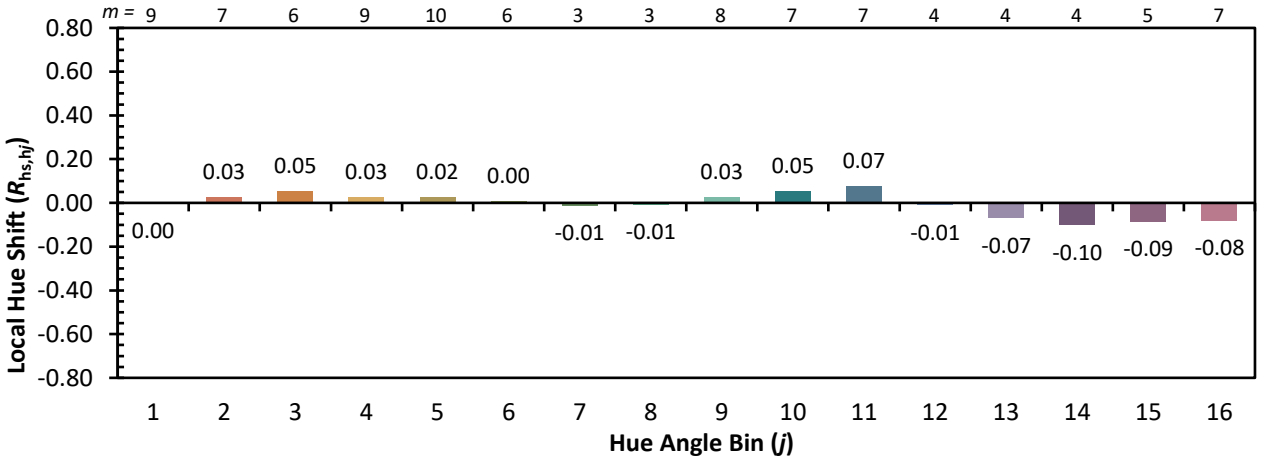
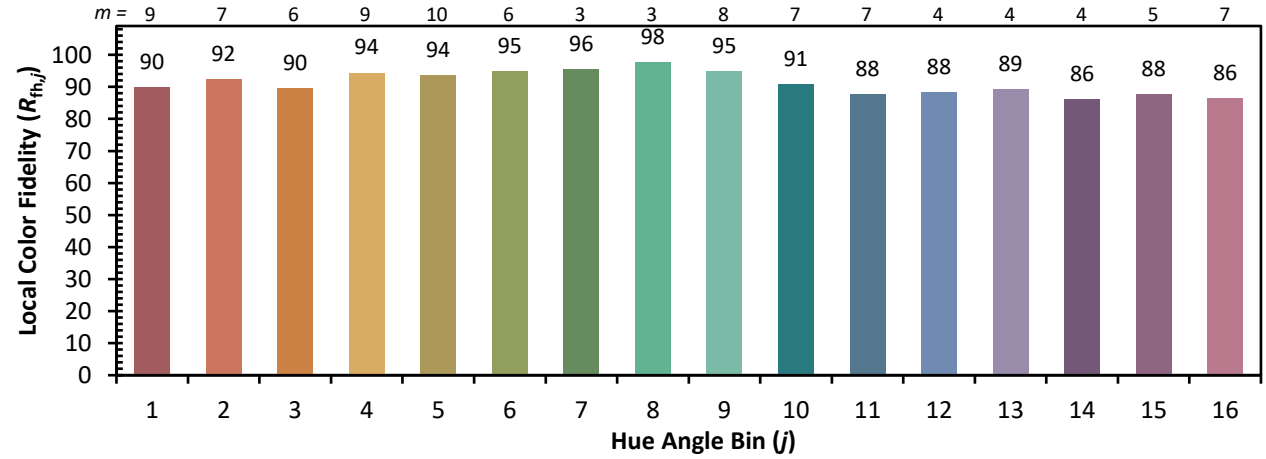
## Color Rendition by Hue-Angle Bin



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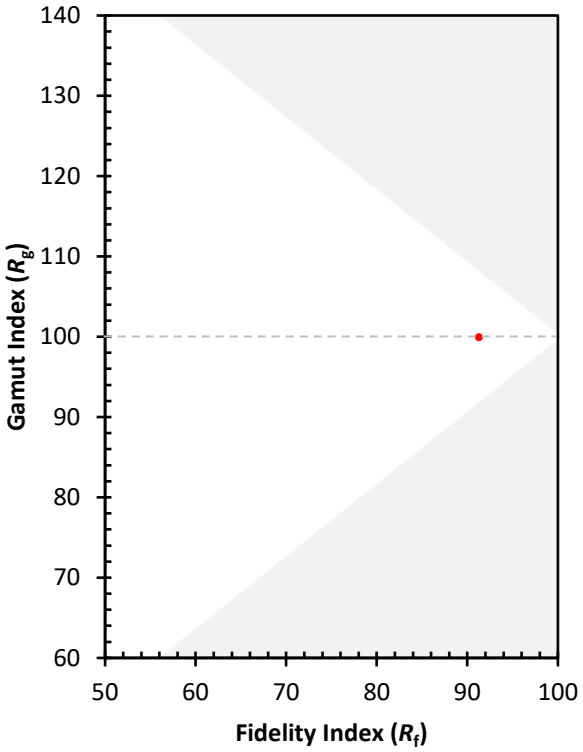
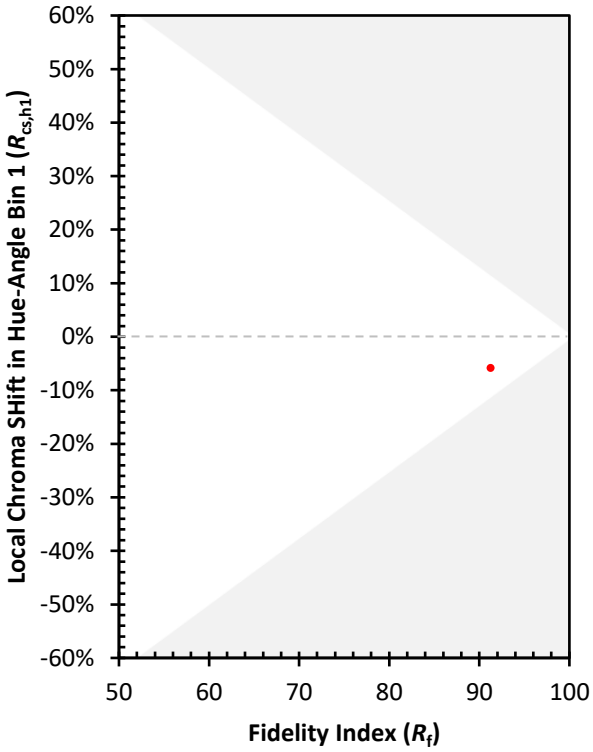
### Measure Comparisons




(END OF REPORT)