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: P981632

Luminaire Tested: 4WNLED-LD4-50SL-F-UNV-L835-CD1-U

Issue Date: 04/17/2025

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: | P981632 |
| Test Lab: | INNOVATION CENTER(P3) |
| Issue Date: | 04/17/2025 |
| Manufacturer: | COOPER LIGHTING SOLUTIONS |
| Product Line: | METALUX |
| Catalog Number: | 4WNLED-LD4-50SL-F-UNV-L835-CD1-U |
| Description: | METALUX 4FT WNLED WRAPAROUND 5000LM PACKAGE 80CRI 3500K TROFFER |
| Light Source: | 3500K CCT, 80+ CRI LEDS |
| Ballast/Driver: | - |

**Summary**

| | |
|---|---|
| Lumens per Lamp: | N/A |
| Luminaire Lumens: | 4898.8 lumens |
| Efficiency: | N/A |
| Efficacy: | 129.9 lumens/watt |
| Spacing Criteria (0/90/45): | 1.22 / 1.27 / 1.38 |
| Luminous Opening: | Rectangular w/ Sides (W: 0.75' x L: 4' x H: 0.17') |
| CIE Type: | Direct |

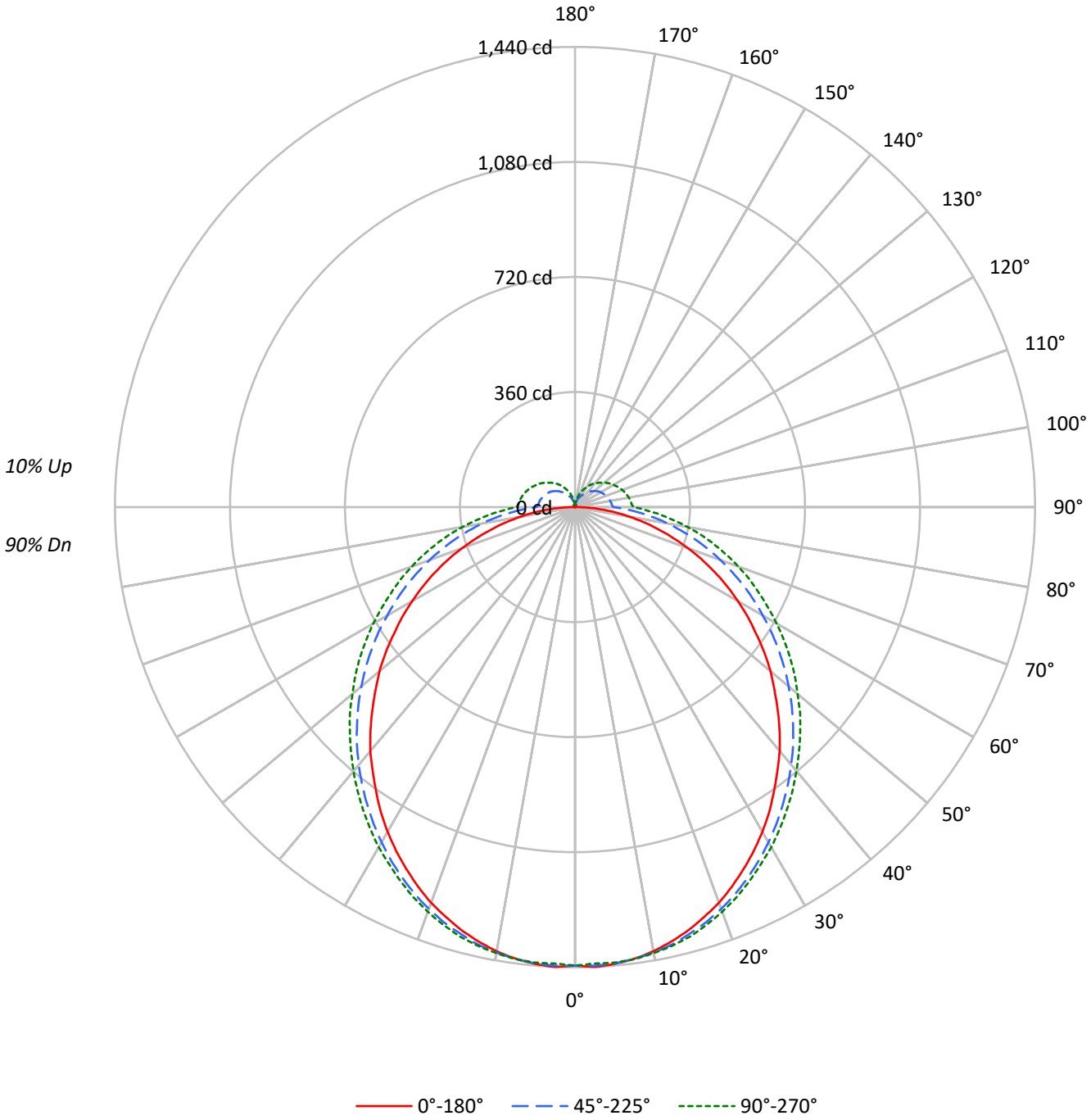
| | |
|---|---|
| Input Watts (W): | 37.7 |
| Input Voltage (V): | 120 |
| Input Current (Ain): | NR |
| Voltage Rise (V): | NR |
| Power Factor: | NR |
| Total Harmonic Distortion (THDi): | NR |
| Frequency (hertz): | 60 |
| Stabilization Time: | NR |
| Operation Time: | NR |
| Ambient Temperature (°C): | NR |
| Test Distance: | 25 FT |

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

Scaled Data Report

TEST NUMBER: P981632
CATALOG NUMBER: 4WNLED-LD4-50SL-F-UNV-L835-CD1-U

## Luminous Intensity Polar Plot



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

Scaled Data Report

TEST NUMBER: P981632
CATALOG NUMBER: 4WNLED-LD4-50SL-F-UNV-L835-CD1-U

## 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 | 117 | 117 | 117 | 117 | 113 | 113 | 113 | 113 | 106 | 106 | 106 | 99 | 99 | 99 | 93 | 93 | 93 | 90 |
| 1 | 105 | 100 | 95 | 91 | 101 | 97 | 92 | 88 | 91 | 87 | 84 | 85 | 82 | 79 | 80 | 78 | 75 | 73 |
| 2 | 95 | 86 | 79 | 73 | 91 | 84 | 77 | 71 | 78 | 73 | 68 | 74 | 69 | 65 | 69 | 66 | 62 | 59 |
| 3 | 86 | 75 | 67 | 60 | 83 | 73 | 65 | 59 | 69 | 62 | 57 | 65 | 59 | 54 | 61 | 56 | 52 | 50 |
| 4 | 79 | 67 | 57 | 51 | 76 | 65 | 56 | 50 | 61 | 54 | 48 | 57 | 51 | 46 | 54 | 49 | 45 | 42 |
| 5 | 72 | 59 | 50 | 43 | 70 | 58 | 49 | 43 | 54 | 47 | 41 | 51 | 45 | 40 | 48 | 43 | 39 | 36 |
| 6 | 67 | 53 | 44 | 38 | 64 | 52 | 43 | 37 | 49 | 42 | 36 | 46 | 40 | 35 | 44 | 38 | 34 | 32 |
| 7 | 62 | 48 | 39 | 33 | 60 | 47 | 39 | 33 | 44 | 37 | 32 | 42 | 36 | 31 | 40 | 34 | 30 | 28 |
| 8 | 58 | 44 | 35 | 29 | 55 | 43 | 35 | 29 | 41 | 33 | 28 | 39 | 32 | 28 | 37 | 31 | 27 | 25 |
| 9 | 54 | 40 | 32 | 26 | 52 | 39 | 31 | 26 | 37 | 30 | 25 | 36 | 29 | 25 | 34 | 28 | 24 | 22 |
| 10 | 50 | 37 | 29 | 24 | 49 | 36 | 29 | 24 | 35 | 28 | 23 | 33 | 27 | 22 | 32 | 26 | 22 | 20 |

## AVERAGE LUMINANCE (cd/sqm):

| | 0° | 45° | 90° |
|---|---|---|---|
| 0° | 5149 | 5149 | 5149 |
| 5° | 5150 | 5081 | 5055 |
| 10° | 5106 | 4994 | 4969 |
| 15° | 5036 | 4893 | 4878 |
| 20° | 4956 | 4784 | 4760 |
| 25° | 4852 | 4659 | 4633 |
| 30° | 4745 | 4530 | 4512 |
| 35° | 4620 | 4395 | 4383 |
| 40° | 4511 | 4263 | 4258 |
| 45° | 4370 | 4128 | 4138 |
| 50° | 4248 | 3984 | 4013 |
| 55° | 4087 | 3837 | 3903 |
| 60° | 3939 | 3680 | 3778 |
| 65° | 3767 | 3527 | 3650 |
| 70° | 3547 | 3361 | 3539 |
| 75° | 3260 | 3179 | 3414 |
| 80° | 2898 | 2947 | 3258 |
| 85° | 2284 | 2691 | 3095 |

## MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°
Vertical Angle: 45°
Luminance: 4370 cd/sqm

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

Scaled Data Report

TEST NUMBER: P981632
CATALOG NUMBER: 4WNLED-LD4-50SL-F-UNV-L835-CD1-U

**ZONAL LUMENS:**

| Zone | Lumens | % Fixture |
|---|---|---|
| 0°-10° | 136.1 | 2.8 |
| 10°-20° | 389.6 | 8.0 |
| 20°-30° | 587.2 | 12.0 |
| 30°-40° | 705.7 | 14.4 |
| 40°-50° | 738.2 | 15.1 |
| 50°-60° | 687.0 | 14.0 |
| 60°-70° | 566.7 | 11.6 |
| 70°-80° | 398.1 | 8.1 |
| 80°-90° | 210.2 | 4.3 |
| 90°-100° | 113.8 | 2.3 |
| 100°-110° | 103.3 | 2.1 |
| 110°-120° | 88.4 | 1.8 |
| 120°-130° | 70.0 | 1.4 |
| 130°-140° | 49.9 | 1.0 |
| 140°-150° | 31.3 | 0.6 |
| 150°-160° | 16.3 | 0.3 |
| 160°-170° | 6.0 | 0.1 |
| 170°-180° | 1.1 | 0.0 |
| 0°-30° | 1112.8 | 22.7 |
| 0°-40° | 1818.5 | 37.1 |
| 0°-60° | 3243.7 | 66.2 |
| 0°-90° | 4418.7 | 90.2 |
| 90°-120° | 305.6 | 6.2 |
| 90°-150° | 456.8 | 9.3 |
| 90°-180° | 480.0 | 9.8 |
| 0°-180° | 4898.8 | 100.0 |

**CANDELA DISTRIBUTION:**

| | 0° | 22.5° | 45° | 67.5° | 90° | Flux |
|---|---|---|---|---|---|---|
| 0° | 1435 | 1435 | 1435 | 1435 | 1435 | |
| 5° | 1435 | 1427 | 1434 | 1434 | 1431 | 136 |
| 15° | 1371 | 1368 | 1383 | 1391 | 1391 | 386 |
| 25° | 1249 | 1256 | 1279 | 1290 | 1292 | 576 |
| 35° | 1086 | 1102 | 1135 | 1152 | 1156 | 680 |
| 45° | 897 | 926 | 965 | 988 | 997 | 693 |
| 55° | 692 | 729 | 777 | 808 | 822 | 620 |
| 65° | 483 | 526 | 582 | 620 | 635 | 478 |
| 75° | 272 | 324 | 389 | 434 | 451 | 288 |
| 85° | 82 | 138 | 205 | 248 | 266 | 86 |
| 90° | 3 | 56 | 120 | 167 | 183 | 6 |
| 95° | 0 | 52 | 115 | 160 | 176 | 1 |
| 105° | 1 | 49 | 108 | 149 | 164 | 2 |
| 115° | 3 | 46 | 98 | 135 | 149 | 3 |
| 125° | 4 | 40 | 86 | 119 | 130 | 4 |
| 135° | 6 | 31 | 70 | 100 | 108 | 4 |
| 145° | 6 | 25 | 50 | 75 | 85 | 4 |
| 155° | 7 | 19 | 36 | 50 | 59 | 3 |
| 165° | 8 | 14 | 20 | 27 | 33 | 2 |
| 175° | 8 | 8 | 10 | 10 | 11 | 1 |
| 180° | 7 | 7 | 7 | 7 | 7 | |

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

Scaled Data Report

TEST NUMBER: P981632
CATALOG NUMBER: 4WNLED-LD4-50SL-F-UNV-L835-CD1-U

**CANDELA DISTRIBUTION (FULL):**

| | 0° | 5° | 10° | 15° | 20° | 22.5° | 25° | 30° | 35° | 40° | 45° |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0° | 1435.0 | 1435.0 | 1435.0 | 1435.0 | 1435.0 | 1435.0 | 1435.0 | 1435.0 | 1435.0 | 1435.0 | 1435.0 |
| 2.5° | 1440.5 | 1439.1 | 1436.4 | 1433.7 | 1432.3 | 1432.3 | 1430.9 | 1430.9 | 1430.9 | 1435.0 | 1436.4 |
| 5° | 1435.0 | 1433.7 | 1430.9 | 1429.6 | 1428.2 | 1426.8 | 1426.8 | 1426.8 | 1428.2 | 1432.3 | 1433.7 |
| 7.5° | 1425.5 | 1424.1 | 1421.4 | 1420.0 | 1418.6 | 1418.6 | 1418.6 | 1418.6 | 1420.0 | 1424.1 | 1425.5 |
| 10° | 1411.8 | 1410.4 | 1407.7 | 1406.3 | 1406.3 | 1406.3 | 1406.3 | 1406.3 | 1409.1 | 1413.2 | 1415.9 |
| 12.5° | 1392.7 | 1391.3 | 1390.0 | 1390.0 | 1388.6 | 1388.6 | 1390.0 | 1390.0 | 1392.7 | 1398.2 | 1402.2 |
| 15° | 1370.8 | 1369.5 | 1368.1 | 1368.1 | 1368.1 | 1368.1 | 1369.5 | 1370.8 | 1374.9 | 1380.4 | 1383.1 |
| 17.5° | 1344.9 | 1344.9 | 1343.5 | 1344.9 | 1344.9 | 1344.9 | 1346.3 | 1349.0 | 1351.7 | 1358.6 | 1362.7 |
| 20° | 1317.6 | 1316.2 | 1314.9 | 1317.6 | 1317.6 | 1317.6 | 1319.0 | 1323.1 | 1327.2 | 1334.0 | 1338.1 |
| 22.5° | 1284.8 | 1284.8 | 1284.8 | 1286.2 | 1287.6 | 1288.9 | 1290.3 | 1294.4 | 1299.8 | 1305.3 | 1310.8 |
| 25° | 1249.3 | 1249.3 | 1249.3 | 1252.1 | 1254.8 | 1256.2 | 1257.5 | 1261.6 | 1268.4 | 1273.9 | 1279.4 |
| 27.5° | 1212.5 | 1212.5 | 1212.5 | 1213.8 | 1217.9 | 1219.3 | 1222.0 | 1227.5 | 1234.3 | 1239.8 | 1246.6 |
| 30° | 1172.9 | 1172.9 | 1174.2 | 1177.0 | 1181.1 | 1182.4 | 1185.2 | 1190.6 | 1198.8 | 1204.3 | 1211.1 |
| 32.5° | 1131.9 | 1130.5 | 1131.9 | 1136.0 | 1140.1 | 1144.2 | 1145.6 | 1152.4 | 1160.6 | 1167.4 | 1174.2 |
| 35° | 1085.5 | 1086.8 | 1089.6 | 1093.7 | 1097.8 | 1101.9 | 1104.6 | 1111.4 | 1121.0 | 1127.8 | 1134.6 |
| 37.5° | 1040.4 | 1041.8 | 1044.5 | 1050.0 | 1055.4 | 1059.5 | 1063.6 | 1069.1 | 1080.0 | 1086.8 | 1095.0 |
| 40° | 996.7 | 994.0 | 999.5 | 1004.9 | 1011.8 | 1015.8 | 1019.9 | 1026.8 | 1037.7 | 1044.5 | 1052.7 |
| 42.5° | 947.6 | 947.6 | 951.7 | 959.9 | 966.7 | 970.8 | 974.9 | 983.1 | 994.0 | 1002.2 | 1010.4 |
| 45° | 897.1 | 898.4 | 903.9 | 912.1 | 920.3 | 925.7 | 928.5 | 938.0 | 948.9 | 957.1 | 965.3 |
| 47.5° | 846.5 | 849.3 | 854.7 | 864.3 | 872.5 | 877.9 | 880.7 | 891.6 | 902.5 | 912.1 | 920.3 |
| 50° | 798.8 | 798.8 | 805.6 | 813.8 | 823.3 | 828.8 | 832.9 | 843.8 | 854.7 | 864.3 | 872.5 |
| 52.5° | 746.9 | 746.9 | 753.7 | 764.6 | 772.8 | 779.6 | 783.7 | 796.0 | 806.9 | 816.5 | 826.1 |
| 55° | 692.2 | 695.0 | 701.8 | 714.1 | 723.7 | 729.1 | 734.6 | 746.9 | 757.8 | 768.7 | 776.9 |
| 57.5° | 641.7 | 643.1 | 651.3 | 662.2 | 673.1 | 678.6 | 685.4 | 696.3 | 708.6 | 720.9 | 729.1 |
| 60° | 588.5 | 591.2 | 598.0 | 611.7 | 622.6 | 628.1 | 633.5 | 647.2 | 659.5 | 670.4 | 678.6 |
| 62.5° | 536.6 | 538.0 | 547.5 | 559.8 | 570.7 | 577.6 | 584.4 | 596.7 | 609.0 | 619.9 | 630.8 |
| 65° | 483.3 | 486.1 | 494.3 | 507.9 | 518.8 | 525.7 | 531.1 | 547.5 | 558.4 | 570.7 | 581.7 |
| 67.5° | 430.1 | 432.8 | 442.4 | 456.0 | 468.3 | 475.2 | 480.6 | 495.6 | 509.3 | 521.6 | 532.5 |
| 70° | 376.8 | 379.6 | 390.5 | 404.2 | 416.4 | 423.3 | 431.5 | 445.1 | 460.1 | 472.4 | 484.7 |
| 72.5° | 322.2 | 326.3 | 335.9 | 350.9 | 367.3 | 374.1 | 380.9 | 397.3 | 411.0 | 424.6 | 435.6 |
| 75° | 271.7 | 275.8 | 286.7 | 300.4 | 314.0 | 323.6 | 329.1 | 345.4 | 363.2 | 376.8 | 389.1 |
| 77.5° | 221.2 | 225.3 | 236.2 | 251.2 | 266.2 | 274.4 | 282.6 | 297.7 | 312.7 | 326.3 | 340.0 |
| 80° | 173.4 | 177.5 | 189.8 | 203.4 | 218.5 | 228.0 | 236.2 | 252.6 | 267.6 | 281.3 | 293.6 |
| 82.5° | 127.0 | 131.1 | 143.4 | 158.4 | 174.8 | 183.0 | 191.2 | 206.2 | 222.6 | 236.2 | 249.9 |
| 85° | 81.9 | 88.8 | 99.7 | 113.3 | 129.7 | 137.9 | 146.1 | 162.5 | 177.5 | 191.2 | 204.8 |
| 87.5° | 39.6 | 45.1 | 57.3 | 72.4 | 87.4 | 96.9 | 103.8 | 118.8 | 135.2 | 147.5 | 161.1 |
| 90° | 2.7 | 8.2 | 19.1 | 32.8 | 47.8 | 56.0 | 64.2 | 79.2 | 94.2 | 107.9 | 120.2 |
| 92.5° | 0.0 | 5.5 | 16.4 | 30.0 | 45.1 | 53.2 | 60.1 | 75.1 | 90.1 | 103.8 | 116.1 |
| 95° | 0.0 | 5.5 | 16.4 | 30.0 | 45.1 | 51.9 | 60.1 | 75.1 | 88.8 | 102.4 | 114.7 |
| 97.5° | 1.4 | 5.5 | 16.4 | 30.0 | 43.7 | 51.9 | 58.7 | 73.7 | 87.4 | 101.0 | 113.3 |
| 100° | 1.4 | 5.5 | 16.4 | 28.7 | 43.7 | 50.5 | 58.7 | 72.4 | 86.0 | 99.7 | 112.0 |
| 102.5° | 1.4 | 5.5 | 16.4 | 28.7 | 43.7 | 50.5 | 57.3 | 71.0 | 84.7 | 98.3 | 110.6 |
| 105° | 1.4 | 6.8 | 16.4 | 28.7 | 42.3 | 49.2 | 56.0 | 71.0 | 83.3 | 95.6 | 107.9 |
| 107.5° | 1.4 | 6.8 | 16.4 | 28.7 | 42.3 | 49.2 | 56.0 | 69.6 | 81.9 | 94.2 | 105.1 |
| 110° | 2.7 | 6.8 | 16.4 | 28.7 | 41.0 | 47.8 | 54.6 | 68.3 | 80.6 | 92.8 | 103.8 |

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

Scaled Data Report

TEST NUMBER: P981632
CATALOG NUMBER: 4WNLED-LD4-50SL-F-UNV-L835-CD1-U

**CANDELA DISTRIBUTION (continued):**

| | 0° | 5° | 10° | 15° | 20° | 22.5° | 25° | 30° | 35° | 40° | 45° |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 112.5° | 2.7 | 6.8 | 16.4 | 27.3 | 41.0 | 46.4 | 53.2 | 66.9 | 79.2 | 90.1 | 101.0 |
| 115° | 2.7 | 6.8 | 16.4 | 27.3 | 39.6 | 46.4 | 51.9 | 65.5 | 76.5 | 88.8 | 98.3 |
| 117.5° | 2.7 | 8.2 | 16.4 | 25.9 | 38.2 | 45.1 | 50.5 | 62.8 | 75.1 | 86.0 | 95.6 |
| 120° | 4.1 | 8.2 | 15.0 | 25.9 | 36.9 | 43.7 | 49.2 | 61.4 | 72.4 | 83.3 | 92.8 |
| 122.5° | 4.1 | 8.2 | 15.0 | 24.6 | 35.5 | 41.0 | 47.8 | 58.7 | 69.6 | 80.6 | 90.1 |
| 125° | 4.1 | 8.2 | 15.0 | 23.2 | 34.1 | 39.6 | 45.1 | 56.0 | 66.9 | 76.5 | 86.0 |
| 127.5° | 4.1 | 8.2 | 15.0 | 23.2 | 32.8 | 36.9 | 42.3 | 53.2 | 62.8 | 72.4 | 81.9 |
| 130° | 4.1 | 8.2 | 13.7 | 21.8 | 30.0 | 35.5 | 39.6 | 50.5 | 58.7 | 68.3 | 77.8 |
| 132.5° | 4.1 | 8.2 | 13.7 | 20.5 | 28.7 | 34.1 | 38.2 | 47.8 | 56.0 | 64.2 | 73.7 |
| 135° | 5.5 | 8.2 | 13.7 | 20.5 | 27.3 | 31.4 | 35.5 | 43.7 | 51.9 | 60.1 | 69.6 |
| 137.5° | 5.5 | 8.2 | 12.3 | 19.1 | 25.9 | 30.0 | 34.1 | 41.0 | 49.2 | 57.3 | 64.2 |
| 140° | 5.5 | 8.2 | 12.3 | 17.8 | 24.6 | 28.7 | 31.4 | 38.2 | 46.4 | 53.2 | 60.1 |
| 142.5° | 5.5 | 8.2 | 12.3 | 17.8 | 23.2 | 25.9 | 30.0 | 35.5 | 42.3 | 49.2 | 56.0 |
| 145° | 5.5 | 8.2 | 12.3 | 16.4 | 21.8 | 24.6 | 27.3 | 34.1 | 39.6 | 45.1 | 50.5 |
| 147.5° | 6.8 | 8.2 | 12.3 | 16.4 | 20.5 | 23.2 | 25.9 | 31.4 | 36.9 | 41.0 | 46.4 |
| 150° | 6.8 | 8.2 | 10.9 | 15.0 | 19.1 | 21.8 | 24.6 | 28.7 | 34.1 | 38.2 | 42.3 |
| 152.5° | 6.8 | 8.2 | 10.9 | 15.0 | 19.1 | 20.5 | 21.8 | 27.3 | 31.4 | 35.5 | 38.2 |
| 155° | 6.8 | 8.2 | 10.9 | 13.7 | 17.8 | 19.1 | 20.5 | 24.6 | 28.7 | 31.4 | 35.5 |
| 157.5° | 6.8 | 8.2 | 10.9 | 13.7 | 16.4 | 17.8 | 19.1 | 21.8 | 25.9 | 28.7 | 31.4 |
| 160° | 6.8 | 8.2 | 10.9 | 12.3 | 15.0 | 16.4 | 17.8 | 20.5 | 23.2 | 25.9 | 27.3 |
| 162.5° | 8.2 | 8.2 | 9.6 | 12.3 | 13.7 | 15.0 | 16.4 | 17.8 | 20.5 | 21.8 | 24.6 |
| 165° | 8.2 | 8.2 | 9.6 | 10.9 | 12.3 | 13.7 | 13.7 | 16.4 | 17.8 | 19.1 | 20.5 |
| 167.5° | 8.2 | 8.2 | 9.6 | 10.9 | 10.9 | 12.3 | 12.3 | 13.7 | 15.0 | 16.4 | 17.8 |
| 170° | 8.2 | 8.2 | 8.2 | 9.6 | 10.9 | 10.9 | 10.9 | 12.3 | 13.7 | 13.7 | 15.0 |
| 172.5° | 8.2 | 8.2 | 8.2 | 8.2 | 9.6 | 9.6 | 9.6 | 10.9 | 10.9 | 12.3 | 12.3 |
| 175° | 8.2 | 8.2 | 8.2 | 8.2 | 8.2 | 8.2 | 9.6 | 9.6 | 9.6 | 9.6 | 9.6 |
| 177.5° | 8.2 | 8.2 | 8.2 | 8.2 | 8.2 | 8.2 | 8.2 | 8.2 | 8.2 | 8.2 | 8.2 |
| 180° | 6.8 | 6.8 | 6.8 | 6.8 | 6.8 | 6.8 | 6.8 | 6.8 | 6.8 | 6.8 | 6.8 |

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

Scaled Data Report

TEST NUMBER: P981632
CATALOG NUMBER: 4WNLED-LD4-50SL-F-UNV-L835-CD1-U

**CANDELA DISTRIBUTION (continued):**

| | 50° | 55° | 60° | 65° | 67.5° | 70° | 75° | 80° | 85° | 90° |
|---|---|---|---|---|---|---|---|---|---|---|
| 0° | 1435.0 | 1435.0 | 1435.0 | 1435.0 | 1435.0 | 1435.0 | 1435.0 | 1435.0 | 1435.0 | 1435.0 |
| 2.5° | *1437.8* | *1440.5* | *1439.1* | *1436.4* | *1436.4* | *1436.4* | *1435.0* | *1432.3* | *1430.9* | *1429.6* |
| 5° | 1435.0 | 1437.8 | 1435.0 | 1433.7 | 1433.7 | 1433.7 | 1433.7 | 1432.3 | 1430.9 | 1430.9 |
| 7.5° | 1428.2 | 1430.9 | 1429.6 | 1428.2 | 1428.2 | 1428.2 | 1428.2 | 1426.8 | 1426.8 | 1426.8 |
| 10° | 1418.6 | 1422.7 | 1421.4 | 1420.0 | 1418.6 | 1420.0 | 1418.6 | 1418.6 | 1417.3 | 1417.3 |
| 12.5° | 1403.6 | 1407.7 | 1407.7 | 1406.3 | 1406.3 | 1406.3 | 1406.3 | 1406.3 | 1405.0 | 1406.3 |
| 15° | 1387.2 | 1391.3 | 1391.3 | 1391.3 | 1391.3 | 1391.3 | 1391.3 | 1391.3 | 1390.0 | 1391.3 |
| 17.5° | 1366.8 | 1370.8 | 1372.2 | 1370.8 | 1372.2 | 1372.2 | 1372.2 | 1370.8 | 1370.8 | 1370.8 |
| 20° | 1342.2 | 1346.3 | 1347.6 | 1346.3 | 1346.3 | 1346.3 | 1347.6 | 1347.6 | 1347.6 | 1347.6 |
| 22.5° | 1314.9 | 1319.0 | 1319.0 | 1319.0 | 1320.3 | 1320.3 | 1320.3 | 1321.7 | 1321.7 | 1321.7 |
| 25° | 1283.5 | 1287.6 | 1287.6 | 1288.9 | 1290.3 | 1290.3 | 1291.7 | 1291.7 | 1291.7 | 1291.7 |
| 27.5° | 1253.4 | 1256.2 | 1256.2 | 1257.5 | 1258.9 | 1258.9 | 1258.9 | 1258.9 | 1261.6 | 1260.2 |
| 30° | 1217.9 | 1220.7 | 1222.0 | 1224.8 | 1224.8 | 1226.1 | 1226.1 | 1227.5 | 1228.8 | 1228.8 |
| 32.5° | 1181.1 | 1183.8 | 1185.2 | 1187.9 | 1189.2 | 1190.6 | 1190.6 | 1193.3 | 1194.7 | 1193.3 |
| 35° | 1141.5 | 1144.2 | 1148.3 | 1149.7 | 1152.4 | 1152.4 | 1155.1 | 1155.1 | 1157.8 | 1156.5 |
| 37.5° | 1101.9 | 1104.6 | 1107.3 | 1110.1 | 1112.8 | 1114.2 | 1115.5 | 1118.2 | 1121.0 | 1118.2 |
| 40° | 1059.5 | 1063.6 | 1067.7 | 1070.5 | 1071.8 | 1074.6 | 1074.6 | 1078.7 | 1081.4 | 1078.7 |
| 42.5° | 1017.2 | 1021.3 | 1025.4 | 1030.9 | 1030.9 | 1032.2 | 1035.0 | 1039.1 | 1039.1 | 1037.7 |
| 45° | 973.5 | 976.2 | 983.1 | 987.2 | 988.5 | 989.9 | 992.6 | 994.0 | 996.7 | 996.7 |
| 47.5° | 927.1 | 932.6 | 939.4 | 943.5 | 944.8 | 946.2 | 948.9 | 951.7 | 955.8 | 955.8 |
| 50° | 880.7 | 887.5 | 890.2 | 897.1 | 899.8 | 901.2 | 905.2 | 908.0 | 910.7 | 909.3 |
| 52.5° | 832.9 | 838.3 | 846.5 | 852.0 | 854.7 | 856.1 | 860.2 | 864.3 | 865.7 | 867.0 |
| 55° | 785.1 | 791.9 | 800.1 | 805.6 | 808.3 | 811.0 | 813.8 | 816.5 | 820.6 | 822.0 |
| 57.5° | 737.3 | 744.1 | 753.7 | 759.2 | 761.9 | 763.2 | 768.7 | 772.8 | 774.2 | 775.5 |
| 60° | 688.2 | 696.3 | 705.9 | 711.4 | 714.1 | 718.2 | 719.6 | 726.4 | 727.8 | 729.1 |
| 62.5° | 640.4 | 648.6 | 658.1 | 664.9 | 667.7 | 670.4 | 675.9 | 680.0 | 682.7 | 681.3 |
| 65° | 592.6 | 600.8 | 610.3 | 617.2 | 619.9 | 624.0 | 628.1 | 632.2 | 634.9 | 634.9 |
| 67.5° | 543.4 | 553.0 | 563.9 | 570.7 | 573.5 | 577.6 | 581.7 | 584.4 | 588.5 | 591.2 |
| 70° | 495.6 | 506.6 | 516.1 | 522.9 | 525.7 | 529.8 | 533.9 | 540.7 | 540.7 | 543.4 |
| 72.5° | 447.8 | 458.8 | 468.3 | 477.9 | 480.6 | 483.3 | 488.8 | 492.9 | 494.3 | 497.0 |
| 75° | 401.4 | 412.3 | 421.9 | 428.7 | 434.2 | 436.9 | 442.4 | 445.1 | 447.8 | 450.6 |
| 77.5° | 352.3 | 365.9 | 375.5 | 383.7 | 387.8 | 390.5 | 396.0 | 400.1 | 402.8 | 404.2 |
| 80° | 305.8 | 316.8 | 326.3 | 334.5 | 338.6 | 342.7 | 348.2 | 350.9 | 355.0 | 356.4 |
| 82.5° | 260.8 | 271.7 | 281.3 | 288.1 | 293.6 | 296.3 | 301.8 | 307.2 | 307.2 | 309.9 |
| 85° | 215.7 | 226.7 | 236.2 | 244.4 | 248.5 | 252.6 | 256.7 | 262.2 | 263.5 | 266.2 |
| 87.5° | 172.0 | 184.3 | 192.5 | 202.1 | 204.8 | 208.9 | 215.7 | 219.8 | 222.6 | 222.6 |
| 90° | 132.4 | 143.4 | 152.9 | 162.5 | 166.6 | 169.3 | 176.1 | 180.2 | 183.0 | 183.0 |
| 92.5° | 128.3 | 139.3 | 148.8 | 158.4 | 161.1 | 165.2 | 170.7 | 174.8 | 177.5 | 177.5 |
| 95° | 127.0 | 137.9 | 147.5 | 155.7 | 159.8 | 162.5 | 169.3 | 172.0 | 174.8 | 176.1 |
| 97.5° | 125.6 | 136.5 | 146.1 | 154.3 | 157.0 | 161.1 | 166.6 | 170.7 | 173.4 | 173.4 |
| 100° | 122.9 | 133.8 | 143.4 | 151.6 | 155.7 | 158.4 | 163.8 | 167.9 | 169.3 | 170.7 |
| 102.5° | 121.5 | 131.1 | 140.6 | 148.8 | 152.9 | 155.7 | 161.1 | 165.2 | 166.6 | 167.9 |
| 105° | 118.8 | 129.7 | 137.9 | 146.1 | 148.8 | 152.9 | 157.0 | 161.1 | 163.8 | 163.8 |
| 107.5° | 116.1 | 127.0 | 135.2 | 143.4 | 146.1 | 148.8 | 154.3 | 158.4 | 159.8 | 161.1 |
| 110° | 113.3 | 124.2 | 132.4 | 139.3 | 143.4 | 146.1 | 150.2 | 154.3 | 155.7 | 157.0 |

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

Scaled Data Report

TEST NUMBER: P981632
CATALOG NUMBER: 4WNLED-LD4-50SL-F-UNV-L835-CD1-U

**CANDELA DISTRIBUTION (continued):**

| | 50° | 55° | 60° | 65° | 67.5° | 70° | 75° | 80° | 85° | 90° |
|---|---|---|---|---|---|---|---|---|---|---|
| 112.5° | 110.6 | 120.2 | 128.3 | 136.5 | 139.3 | 142.0 | 146.1 | 150.2 | 151.6 | 152.9 |
| 115° | 107.9 | 117.4 | 125.6 | 132.4 | 135.2 | 137.9 | 142.0 | 146.1 | 147.5 | 148.8 |
| 117.5° | 105.1 | 114.7 | 121.5 | 128.3 | 131.1 | 133.8 | 137.9 | 142.0 | 143.4 | 143.4 |
| 120° | 102.4 | 110.6 | 118.8 | 124.2 | 127.0 | 129.7 | 133.8 | 136.5 | 139.3 | 139.3 |
| 122.5° | 98.3 | 106.5 | 114.7 | 120.2 | 122.9 | 125.6 | 129.7 | 132.4 | 133.8 | 135.2 |
| 125° | 95.6 | 103.8 | 110.6 | 116.1 | 118.8 | 121.5 | 124.2 | 127.0 | 128.3 | 129.7 |
| 127.5° | 91.5 | 98.3 | 106.5 | 112.0 | 114.7 | 117.4 | 120.2 | 122.9 | 124.2 | 124.2 |
| 130° | 86.0 | 94.2 | 101.0 | 107.9 | 110.6 | 112.0 | 116.1 | 117.4 | 118.8 | 118.8 |
| 132.5° | 81.9 | 88.8 | 95.6 | 102.4 | 105.1 | 107.9 | 110.6 | 112.0 | 113.3 | 113.3 |
| 135° | 76.5 | 83.3 | 90.1 | 96.9 | 99.7 | 102.4 | 105.1 | 106.5 | 107.9 | 107.9 |
| 137.5° | 72.4 | 79.2 | 84.7 | 91.5 | 94.2 | 96.9 | 99.7 | 101.0 | 102.4 | 102.4 |
| 140° | 66.9 | 72.4 | 79.2 | 86.0 | 88.8 | 90.1 | 94.2 | 95.6 | 96.9 | 96.9 |
| 142.5° | 61.4 | 68.3 | 73.7 | 79.2 | 81.9 | 84.7 | 88.8 | 90.1 | 91.5 | 91.5 |
| 145° | 57.3 | 62.8 | 66.9 | 72.4 | 75.1 | 77.8 | 81.9 | 84.7 | 84.7 | 84.7 |
| 147.5° | 51.9 | 57.3 | 61.4 | 66.9 | 69.6 | 71.0 | 76.5 | 77.8 | 79.2 | 79.2 |
| 150° | 47.8 | 51.9 | 56.0 | 60.1 | 62.8 | 65.5 | 69.6 | 72.4 | 72.4 | 72.4 |
| 152.5° | 43.7 | 46.4 | 50.5 | 54.6 | 56.0 | 58.7 | 62.8 | 65.5 | 65.5 | 65.5 |
| 155° | 38.2 | 42.3 | 45.1 | 47.8 | 50.5 | 51.9 | 56.0 | 58.7 | 58.7 | 58.7 |
| 157.5° | 34.1 | 36.9 | 39.6 | 42.3 | 43.7 | 45.1 | 49.2 | 51.9 | 53.2 | 53.2 |
| 160° | 30.0 | 32.8 | 34.1 | 36.9 | 38.2 | 39.6 | 41.0 | 45.1 | 46.4 | 46.4 |
| 162.5° | 25.9 | 27.3 | 30.0 | 31.4 | 32.8 | 32.8 | 35.5 | 36.9 | 39.6 | 39.6 |
| 165° | 21.8 | 23.2 | 24.6 | 25.9 | 27.3 | 27.3 | 28.7 | 31.4 | 32.8 | 32.8 |
| 167.5° | 19.1 | 19.1 | 20.5 | 21.8 | 21.8 | 21.8 | 23.2 | 24.6 | 27.3 | 27.3 |
| 170° | 15.0 | 16.4 | 16.4 | 16.4 | 17.8 | 17.8 | 17.8 | 19.1 | 20.5 | 21.8 |
| 172.5° | 12.3 | 12.3 | 13.7 | 13.7 | 13.7 | 13.7 | 13.7 | 13.7 | 15.0 | 16.4 |
| 175° | 9.6 | 9.6 | 9.6 | 9.6 | 9.6 | 9.6 | 9.6 | 9.6 | 9.6 | 10.9 |
| 177.5° | 8.2 | 8.2 | 8.2 | 6.8 | 6.8 | 6.8 | 6.8 | 6.8 | 6.8 | 5.5 |
| 180° | 6.8 | 6.8 | 6.8 | 6.8 | 6.8 | 6.8 | 6.8 | 6.8 | 6.8 | 6.8 |

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: SP3-2508-516-10

Test Date: 09/05/2025

Luminaire Tested: 4WNLED-LD4-50SL-F-UNVL935-CD1-U

Data in this report applies to families of products including 4WNLED-LD4-50SL-F-UNVL935-CD1-U

Report Generated By FNC07603 / LDUCLS01DT01661
Version: v7.05

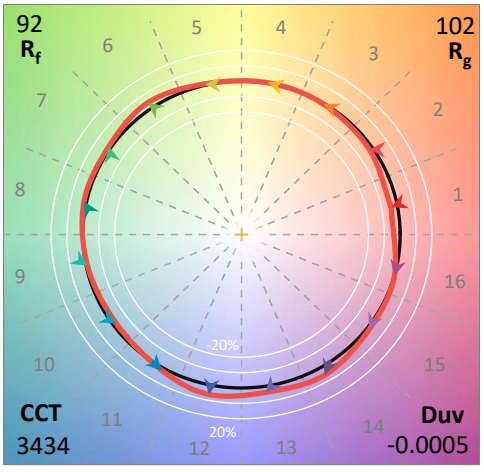
## Test Information

| | |
|---|---|
| Test Method: | LM-79-2019 |
| Report Number: | SP3-2508-516-10 |
| Test Lab: | COOPER LIGHTING SOLUTIONS |
| Photometer: | SP3 - 3M SPHERE |
| Measurement Geometry: | 4π |
| Issue Date: | 09/05/2025 |
| Manufacturer: | COOPER LIGHTING SOLUTIONS |
| Product Line: | Metalux |
| Catalog Number: | **4WNLED-LD4-50SL-F-UNVL935-CD1-U** |
| Description: | 4FT WNLED 5000LM 935 |

## Spectral Parameters

| | | | | | |
|---|---|---|---|---|---|
| CCT (K): | 3434 | CRI (Ra): | 95.1 | | |
| CIE u': | 0.2376 | R1: | 97.5 | R9: | 72.8 |
| CIE v': | 0.5120 | R2: | 96.4 | R10: | 89.6 |
| Duv: | -0.0005 | R3: | 93.7 | R11: | 94.9 |
| CIE x: | 0.4085 | R4: | 96.0 | R12: | 80.4 |
| CIE y: | 0.3912 | R5: | 96.5 | R13: | 97.1 |
| CIE z: | 0.2002 | R6: | 95.5 | R14: | 95.3 |
| Peak Wavelength (nm): | 630 | R7: | 95.1 | R15: | 94.5 |
| Dominant Wavelength (nm): | 581 | R8: | 90.0 | | |
| Purity: | 40.03883 | | | | |

| | |
|---|---|
| Rf: | 92.1 |
| Rg: | 101.8 |




## Test Conditions

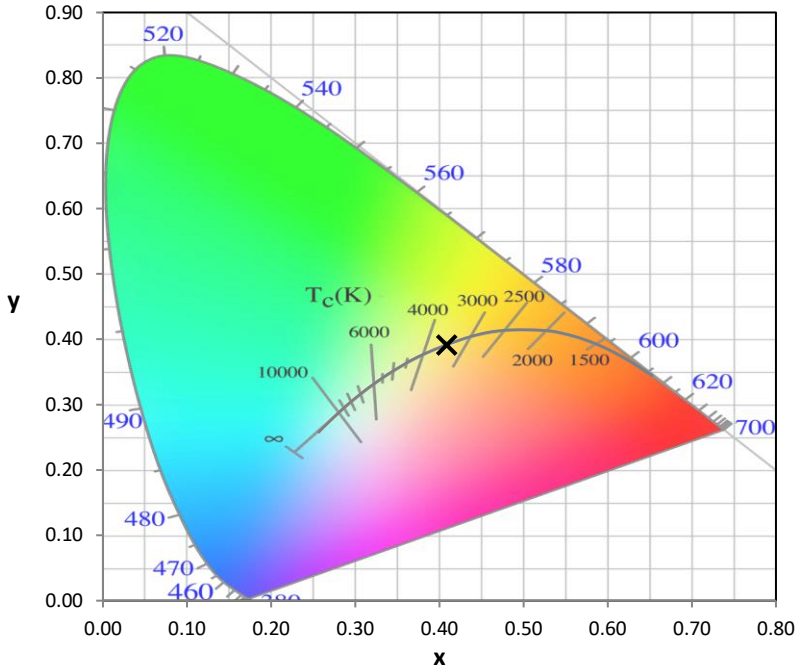
| | |
|---|---|
| Stabilization Time: | 24M |
| Operation Time: | 1H 24M |
| Sphere Temperature (°C): | 25.0 |

REPORT NUMBER: SP3-2508-516-10

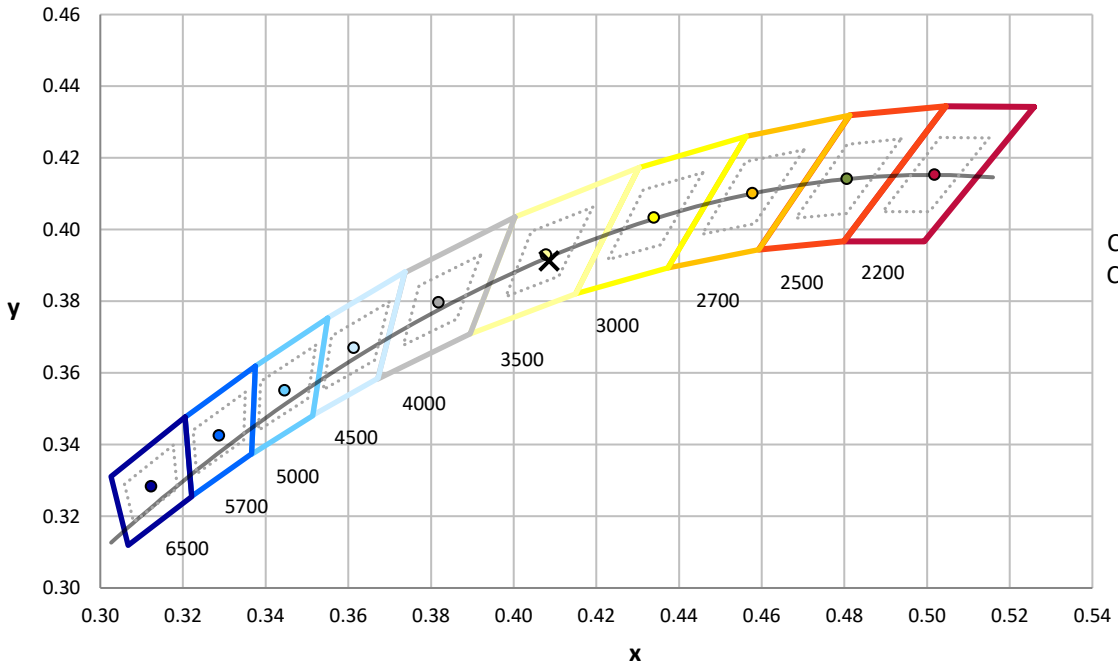
| Measurement and Test Equipment | | | |
|---|---|---|---|
| Instrument | Identification Number | Calibration Date | Calibration Due Date |
| Photometer | 3M SPHERE IN02505 | 7/1/2025 | 1/1/2026 |
| Power Meter | XITRON INXT2011006 | 1/20/2025 | 1/20/2026 |
| AC Power Source | CHROMA 61604 IN6064A | 10/22/2024 | 10/22/2025 |
| DC Power Source | EYSIGHT N5770A IN0534 | 10/22/2024 | 10/22/2025 |
| Sphere Thermometer | TANDD IN4036E | 10/22/2024 | 10/22/2025 |
| | | | |

REPORT NUMBER: SP3-2508-516-10

## CIE 1931 Chromaticity Diagram




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

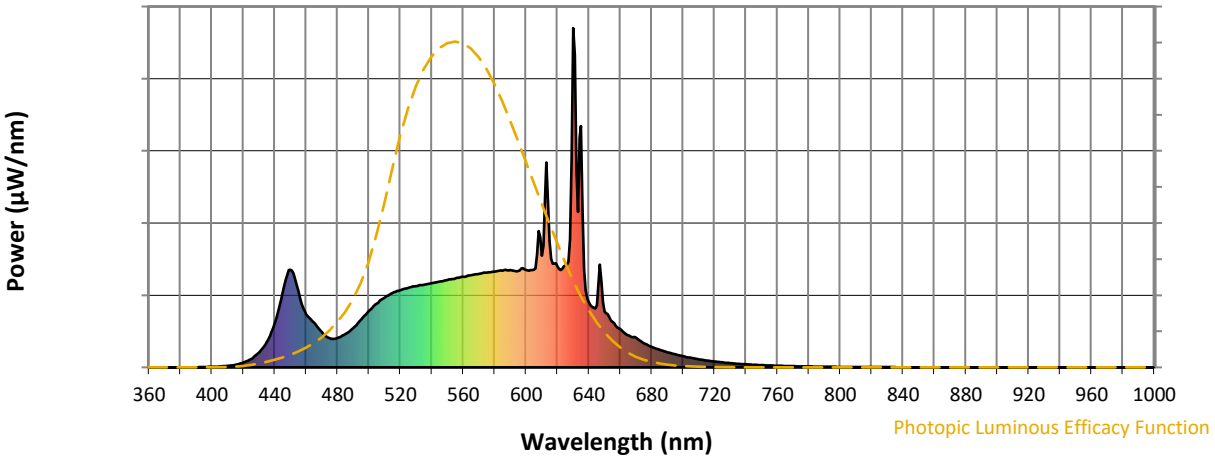



CCT = 3434K
CIE x = 0.4085
CIE y = 0.3912
Duv = -0.0005

Point lies inside the ANSI 3500K 4-step quadrangle

REPORT NUMBER: SP3-2508-516-10

## Photopic Flux vs. Wavelength

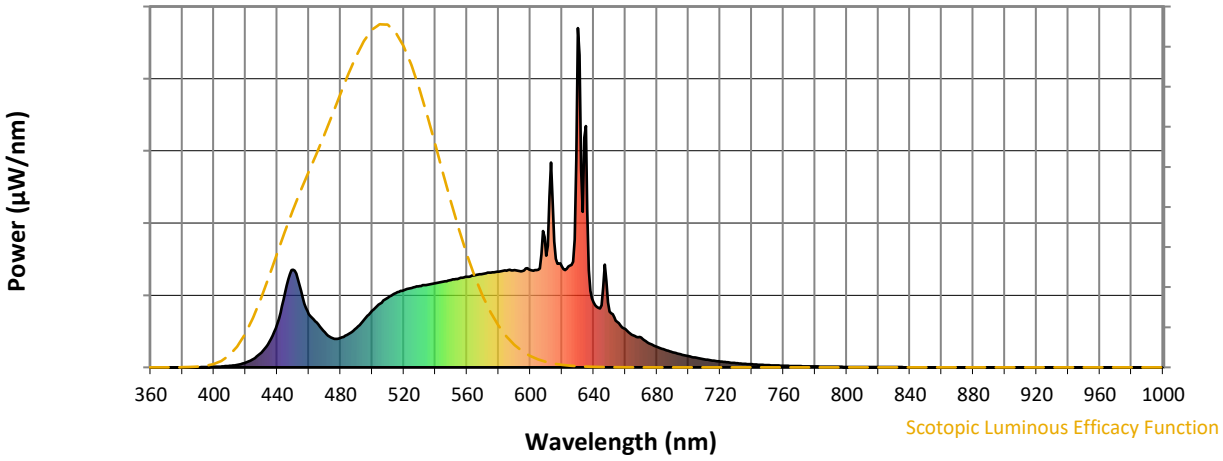



## Photopic Lumens: NR

| 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 | 116 | NR | 620 | 297 | NR | 750 | 7 | NR | 880 | 0 | NR |
| 365 | 0 | NR | 495 | 140 | NR | 625 | 300 | NR | 755 | 6 | NR | 885 | 0 | NR |
| 370 | 0 | NR | 500 | 167 | NR | 630 | 1000 | NR | 760 | 5 | NR | 890 | 0 | NR |
| 375 | 0 | NR | 505 | 188 | NR | 635 | 711 | NR | 765 | 4 | NR | 895 | 0 | NR |
| 380 | 0 | NR | 510 | 205 | NR | 640 | 191 | NR | 770 | 3 | NR | 900 | 0 | NR |
| 385 | 0 | NR | 515 | 219 | NR | 645 | 183 | NR | 775 | 3 | NR | 905 | 0 | NR |
| 390 | 0 | NR | 520 | 227 | NR | 650 | 164 | NR | 780 | 3 | NR | 910 | 0 | NR |
| 395 | 1 | NR | 525 | 234 | NR | 655 | 134 | NR | 785 | 2 | NR | 915 | 0 | NR |
| 400 | 2 | NR | 530 | 239 | NR | 660 | 113 | NR | 790 | 2 | NR | 920 | 0 | NR |
| 405 | 3 | NR | 535 | 243 | NR | 665 | 94 | NR | 795 | 2 | NR | 925 | 0 | NR |
| 410 | 4 | NR | 540 | 248 | NR | 670 | 88 | NR | 800 | 1 | NR | 930 | 0 | NR |
| 415 | 8 | NR | 545 | 253 | NR | 675 | 71 | NR | 805 | 1 | NR | 935 | 0 | NR |
| 420 | 14 | NR | 550 | 258 | NR | 680 | 61 | NR | 810 | 1 | NR | 940 | 0 | NR |
| 425 | 25 | NR | 555 | 262 | NR | 685 | 52 | NR | 815 | 1 | NR | 945 | 0 | NR |
| 430 | 44 | NR | 560 | 267 | NR | 690 | 45 | NR | 820 | 1 | NR | 950 | 0 | NR |
| 435 | 75 | NR | 565 | 272 | NR | 695 | 38 | NR | 825 | 1 | NR | 955 | 0 | NR |
| 440 | 129 | NR | 570 | 276 | NR | 700 | 33 | NR | 830 | 1 | NR | 960 | 0 | NR |
| 445 | 221 | NR | 575 | 279 | NR | 705 | 28 | NR | 835 | 1 | NR | 965 | 0 | NR |
| 450 | 288 | NR | 580 | 282 | NR | 710 | 24 | NR | 840 | 0 | NR | 970 | 0 | NR |
| 455 | 225 | NR | 585 | 285 | NR | 715 | 20 | NR | 845 | 0 | NR | 975 | 0 | NR |
| 460 | 157 | NR | 590 | 286 | NR | 720 | 17 | NR | 850 | 0 | NR | 980 | 0 | NR |
| 465 | 132 | NR | 595 | 284 | NR | 725 | 15 | NR | 855 | 0 | NR | 985 | 0 | NR |
| 470 | 104 | NR | 600 | 286 | NR | 730 | 12 | NR | 860 | 0 | NR | 990 | 0 | NR |
| 475 | 85 | NR | 605 | 287 | NR | 735 | 11 | NR | 865 | 0 | NR | 995 | 0 | NR |
| 480 | 86 | NR | 610 | 329 | NR | 740 | 9 | NR | 870 | 0 | NR | 1000 | 0 | NR |
| 485 | 98 | NR | 615 | 371 | NR | 745 | 8 | NR | 875 | 0 | NR | | | |

REPORT NUMBER: SP3-2508-516-10

## Scotopic Flux vs. Wavelength

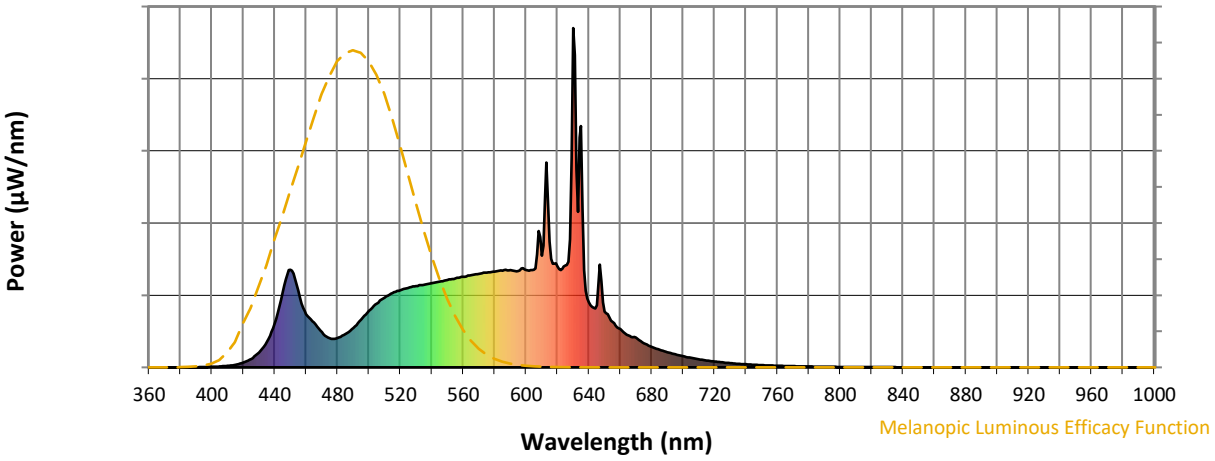



**Scotopic Lumens: NR** **S/P: 1.59**

| 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 | 116 | NR | 620 | 297 | NR | 750 | 7 | NR | 880 | 0 | NR |
| 365 | 0 | NR | 495 | 140 | NR | 625 | 300 | NR | 755 | 6 | NR | 885 | 0 | NR |
| 370 | 0 | NR | 500 | 167 | NR | 630 | 1000 | NR | 760 | 5 | NR | 890 | 0 | NR |
| 375 | 0 | NR | 505 | 188 | NR | 635 | 711 | NR | 765 | 4 | NR | 895 | 0 | NR |
| 380 | 0 | NR | 510 | 205 | NR | 640 | 191 | NR | 770 | 3 | NR | 900 | 0 | NR |
| 385 | 0 | NR | 515 | 219 | NR | 645 | 183 | NR | 775 | 3 | NR | 905 | 0 | NR |
| 390 | 0 | NR | 520 | 227 | NR | 650 | 164 | NR | 780 | 3 | NR | 910 | 0 | NR |
| 395 | 1 | NR | 525 | 234 | NR | 655 | 134 | NR | 785 | 2 | NR | 915 | 0 | NR |
| 400 | 2 | NR | 530 | 239 | NR | 660 | 113 | NR | 790 | 2 | NR | 920 | 0 | NR |
| 405 | 3 | NR | 535 | 243 | NR | 665 | 94 | NR | 795 | 2 | NR | 925 | 0 | NR |
| 410 | 4 | NR | 540 | 248 | NR | 670 | 88 | NR | 800 | 1 | NR | 930 | 0 | NR |
| 415 | 8 | NR | 545 | 253 | NR | 675 | 71 | NR | 805 | 1 | NR | 935 | 0 | NR |
| 420 | 14 | NR | 550 | 258 | NR | 680 | 61 | NR | 810 | 1 | NR | 940 | 0 | NR |
| 425 | 25 | NR | 555 | 262 | NR | 685 | 52 | NR | 815 | 1 | NR | 945 | 0 | NR |
| 430 | 44 | NR | 560 | 267 | NR | 690 | 45 | NR | 820 | 1 | NR | 950 | 0 | NR |
| 435 | 75 | NR | 565 | 272 | NR | 695 | 38 | NR | 825 | 1 | NR | 955 | 0 | NR |
| 440 | 129 | NR | 570 | 276 | NR | 700 | 33 | NR | 830 | 1 | NR | 960 | 0 | NR |
| 445 | 221 | NR | 575 | 279 | NR | 705 | 28 | NR | 835 | 1 | NR | 965 | 0 | NR |
| 450 | 288 | NR | 580 | 282 | NR | 710 | 24 | NR | 840 | 0 | NR | 970 | 0 | NR |
| 455 | 225 | NR | 585 | 285 | NR | 715 | 20 | NR | 845 | 0 | NR | 975 | 0 | NR |
| 460 | 157 | NR | 590 | 286 | NR | 720 | 17 | NR | 850 | 0 | NR | 980 | 0 | NR |
| 465 | 132 | NR | 595 | 284 | NR | 725 | 15 | NR | 855 | 0 | NR | 985 | 0 | NR |
| 470 | 104 | NR | 600 | 286 | NR | 730 | 12 | NR | 860 | 0 | NR | 990 | 0 | NR |
| 475 | 85 | NR | 605 | 287 | NR | 735 | 11 | NR | 865 | 0 | NR | 995 | 0 | NR |
| 480 | 86 | NR | 610 | 329 | NR | 740 | 9 | NR | 870 | 0 | NR | 1000 | 0 | NR |
| 485 | 98 | NR | 615 | 371 | NR | 745 | 8 | NR | 875 | 0 | NR | | | |

REPORT NUMBER: SP3-2508-516-10

## Melanopic Flux vs. Wavelength




**Melanopic Lumens: NR** **M/P: 3.19**

| 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 | 116 | NR | 620 | 297 | NR | 750 | 7 | NR | 880 | 0 | NR |
| 365 | 0 | NR | 495 | 140 | NR | 625 | 300 | NR | 755 | 6 | NR | 885 | 0 | NR |
| 370 | 0 | NR | 500 | 167 | NR | 630 | 1000 | NR | 760 | 5 | NR | 890 | 0 | NR |
| 375 | 0 | NR | 505 | 188 | NR | 635 | 711 | NR | 765 | 4 | NR | 895 | 0 | NR |
| 380 | 0 | NR | 510 | 205 | NR | 640 | 191 | NR | 770 | 3 | NR | 900 | 0 | NR |
| 385 | 0 | NR | 515 | 219 | NR | 645 | 183 | NR | 775 | 3 | NR | 905 | 0 | NR |
| 390 | 0 | NR | 520 | 227 | NR | 650 | 164 | NR | 780 | 3 | NR | 910 | 0 | NR |
| 395 | 1 | NR | 525 | 234 | NR | 655 | 134 | NR | 785 | 2 | NR | 915 | 0 | NR |
| 400 | 2 | NR | 530 | 239 | NR | 660 | 113 | NR | 790 | 2 | NR | 920 | 0 | NR |
| 405 | 3 | NR | 535 | 243 | NR | 665 | 94 | NR | 795 | 2 | NR | 925 | 0 | NR |
| 410 | 4 | NR | 540 | 248 | NR | 670 | 88 | NR | 800 | 1 | NR | 930 | 0 | NR |
| 415 | 8 | NR | 545 | 253 | NR | 675 | 71 | NR | 805 | 1 | NR | 935 | 0 | NR |
| 420 | 14 | NR | 550 | 258 | NR | 680 | 61 | NR | 810 | 1 | NR | 940 | 0 | NR |
| 425 | 25 | NR | 555 | 262 | NR | 685 | 52 | NR | 815 | 1 | NR | 945 | 0 | NR |
| 430 | 44 | NR | 560 | 267 | NR | 690 | 45 | NR | 820 | 1 | NR | 950 | 0 | NR |
| 435 | 75 | NR | 565 | 272 | NR | 695 | 38 | NR | 825 | 1 | NR | 955 | 0 | NR |
| 440 | 129 | NR | 570 | 276 | NR | 700 | 33 | NR | 830 | 1 | NR | 960 | 0 | NR |
| 445 | 221 | NR | 575 | 279 | NR | 705 | 28 | NR | 835 | 1 | NR | 965 | 0 | NR |
| 450 | 288 | NR | 580 | 282 | NR | 710 | 24 | NR | 840 | 0 | NR | 970 | 0 | NR |
| 455 | 225 | NR | 585 | 285 | NR | 715 | 20 | NR | 845 | 0 | NR | 975 | 0 | NR |
| 460 | 157 | NR | 590 | 286 | NR | 720 | 17 | NR | 850 | 0 | NR | 980 | 0 | NR |
| 465 | 132 | NR | 595 | 284 | NR | 725 | 15 | NR | 855 | 0 | NR | 985 | 0 | NR |
| 470 | 104 | NR | 600 | 286 | NR | 730 | 12 | NR | 860 | 0 | NR | 990 | 0 | NR |
| 475 | 85 | NR | 605 | 287 | NR | 735 | 11 | NR | 865 | 0 | NR | 995 | 0 | NR |
| 480 | 86 | NR | 610 | 329 | NR | 740 | 9 | NR | 870 | 0 | NR | 1000 | 0 | NR |
| 485 | 98 | NR | 615 | 371 | NR | 745 | 8 | NR | 875 | 0 | NR | | | |

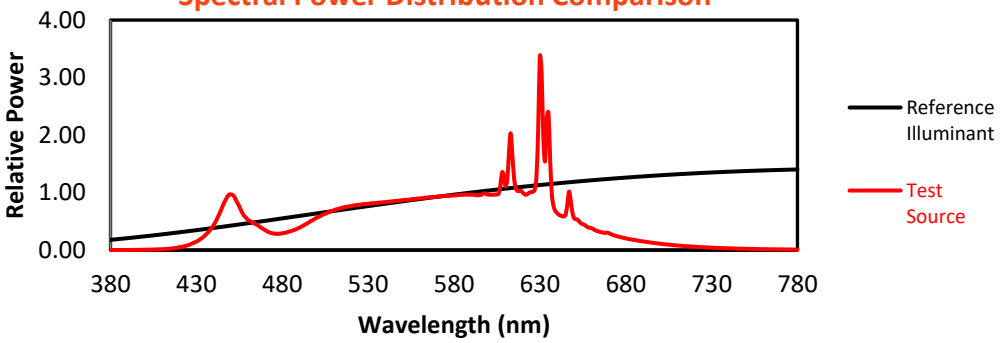
REPORT NUMBER: SP3-2508-516-10

# TM-30-18

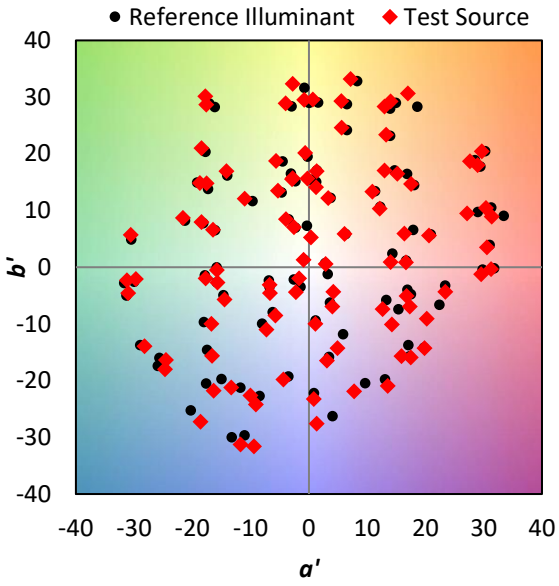
## Summary

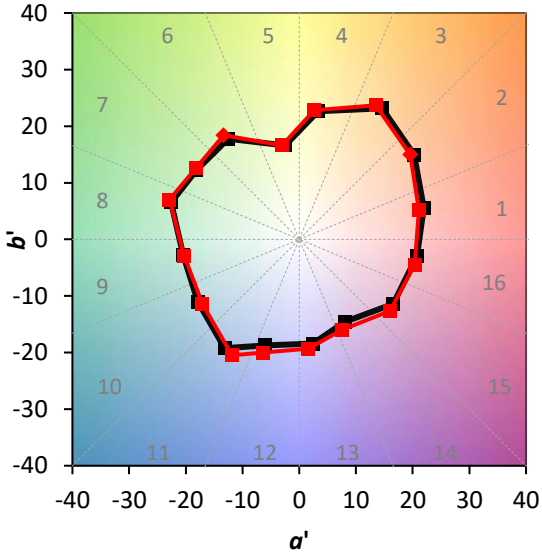
$R_f$ = 92.1
$R_g$ = 101.8
CIE $R_a$ = 95.1
$R_9$ = 72.8

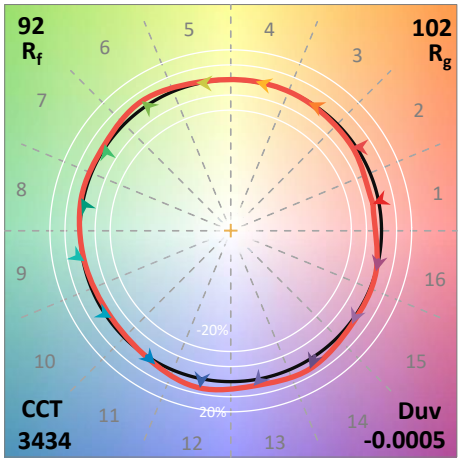
## Spectral Power Distribution Comparison

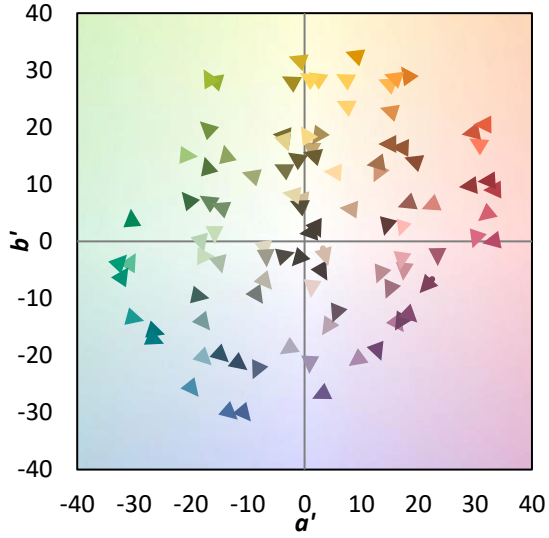



## Color Vector Graphics



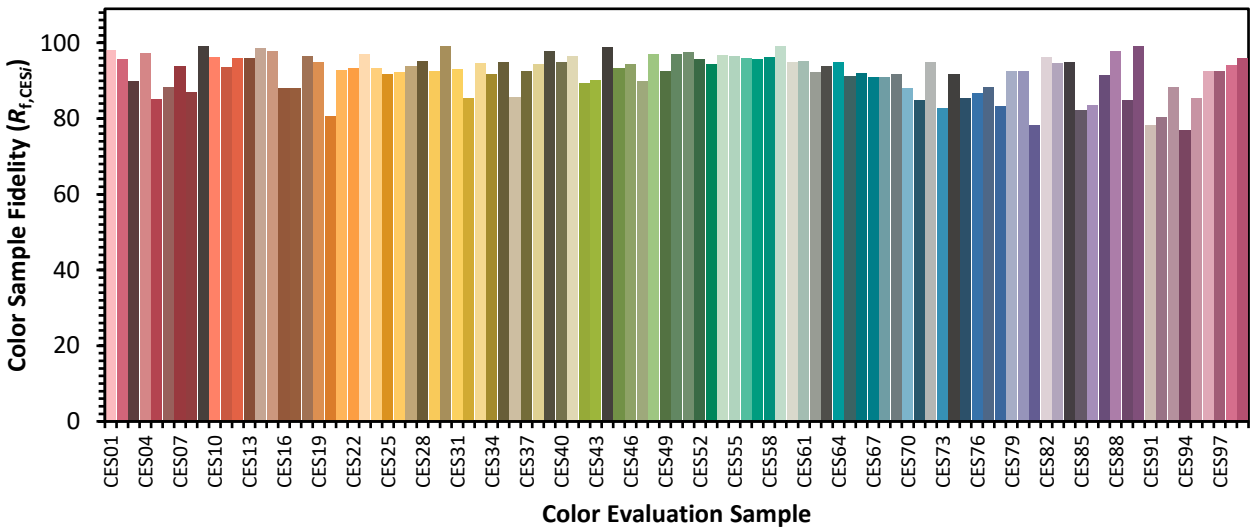



REPORT NUMBER: SP3-2508-516-10

# TM-30-18

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

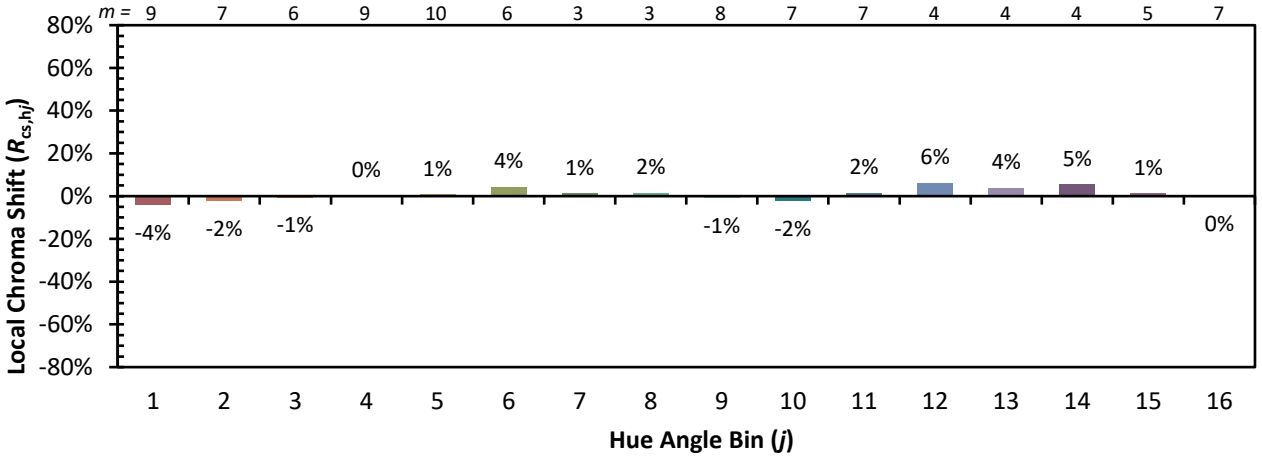
| | | | |
|---|---|---|---|
| CES01 = 86 | CES26 = 92 | CES51 = 98 | CES76 = 87 |
| CES02 = 62 | CES27 = 94 | CES52 = 96 | CES77 = 88 |
| CES03 = 31 | CES28 = 95 | CES53 = 94 | CES78 = 83 |
| CES04 = 70 | CES29 = 93 | CES54 = 97 | CES79 = 93 |
| CES05 = 50 | CES30 = 99 | CES55 = 97 | CES80 = 92 |
| CES06 = 51 | CES31 = 93 | CES56 = 96 | CES81 = 78 |
| CES07 = 43 | CES32 = 85 | CES57 = 96 | CES82 = 96 |
| CES08 = 42 | CES33 = 95 | CES58 = 96 | CES83 = 95 |
| CES09 = 29 | CES34 = 92 | CES59 = 99 | CES84 = 95 |
| CES10 = 75 | CES35 = 95 | CES60 = 95 | CES85 = 82 |
| CES11 = 58 | CES36 = 86 | CES61 = 95 | CES86 = 84 |
| CES12 = 64 | CES37 = 92 | CES62 = 92 | CES87 = 92 |
| CES13 = 44 | CES38 = 95 | CES63 = 94 | CES88 = 98 |
| CES14 = 74 | CES39 = 98 | CES64 = 95 | CES89 = 85 |
| CES15 = 72 | CES40 = 95 | CES65 = 91 | CES90 = 99 |
| CES16 = 48 | CES41 = 97 | CES66 = 92 | CES91 = 78 |
| CES17 = 49 | CES42 = 89 | CES67 = 91 | CES92 = 80 |
| CES18 = 56 | CES43 = 90 | CES68 = 91 | CES93 = 88 |
| CES19 = 71 | CES44 = 99 | CES69 = 92 | CES94 = 77 |
| CES20 = 67 | CES45 = 93 | CES70 = 88 | CES95 = 85 |
| CES21 = 86 | CES46 = 94 | CES71 = 85 | CES96 = 93 |
| CES22 = 78 | CES47 = 90 | CES72 = 95 | CES97 = 92 |
| CES23 = 91 | CES48 = 97 | CES73 = 83 | CES98 = 94 |
| CES24 = 90 | CES49 = 93 | CES74 = 92 | CES99 = 96 |
| CES25 = 71 | CES50 = 97 | CES75 = 85 | |

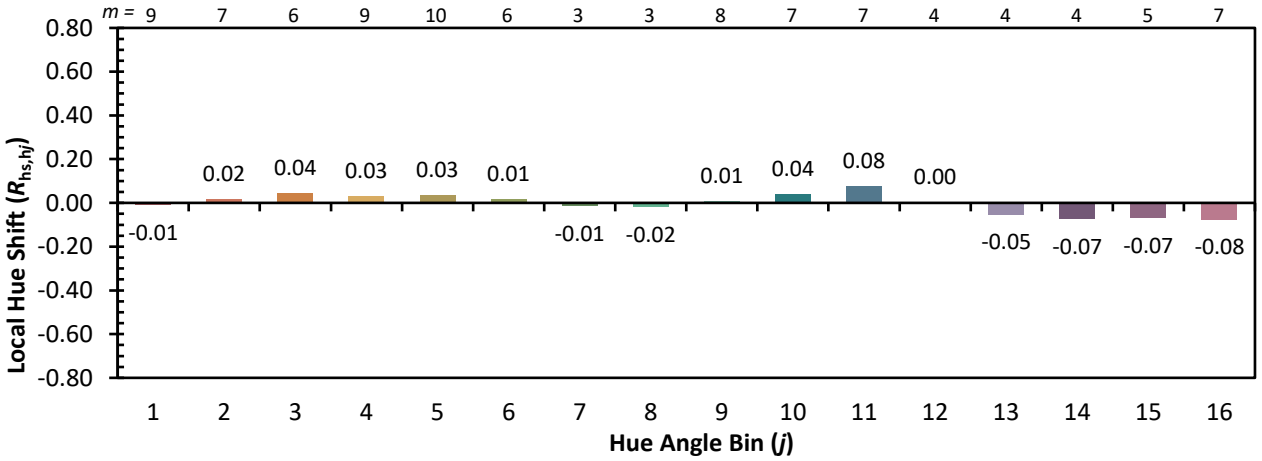


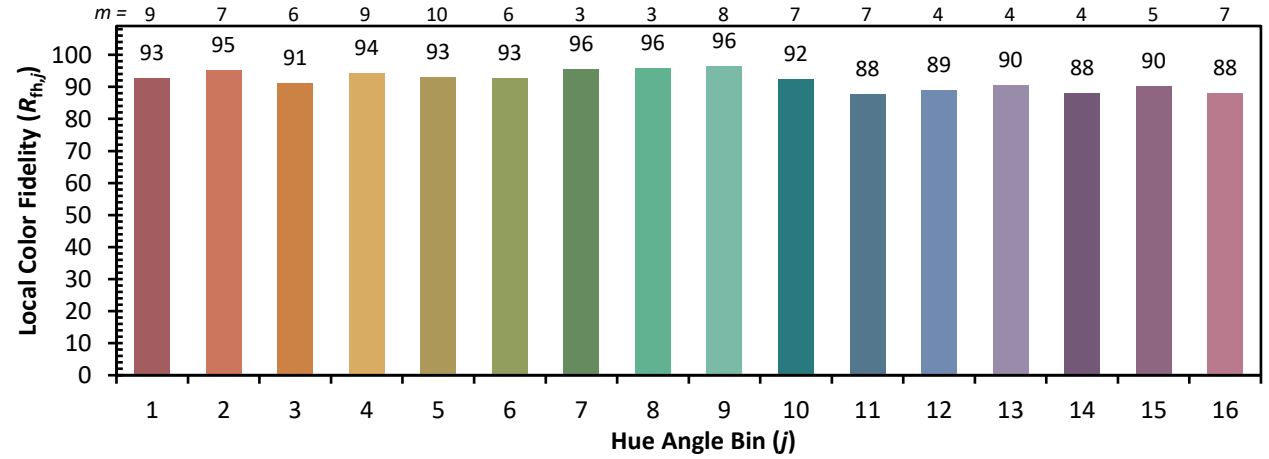
REPORT NUMBER: SP3-2508-516-10

**TM-30-18**

## Color Rendition by Hue-Angle Bin



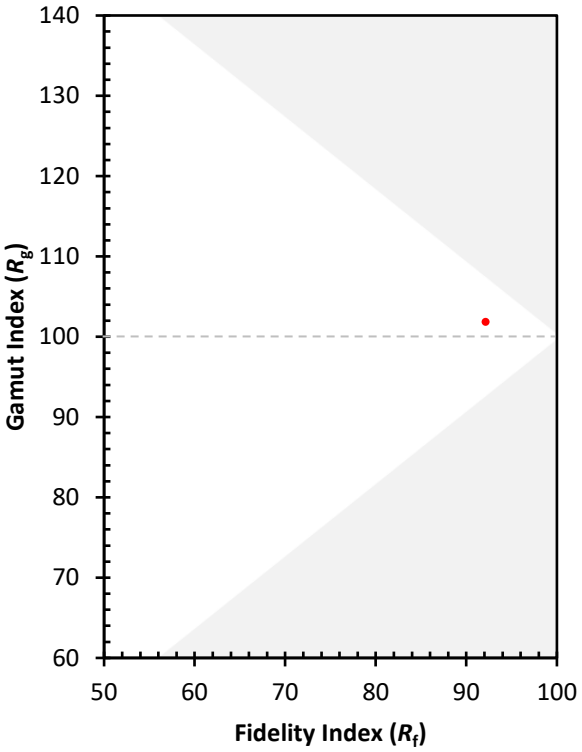



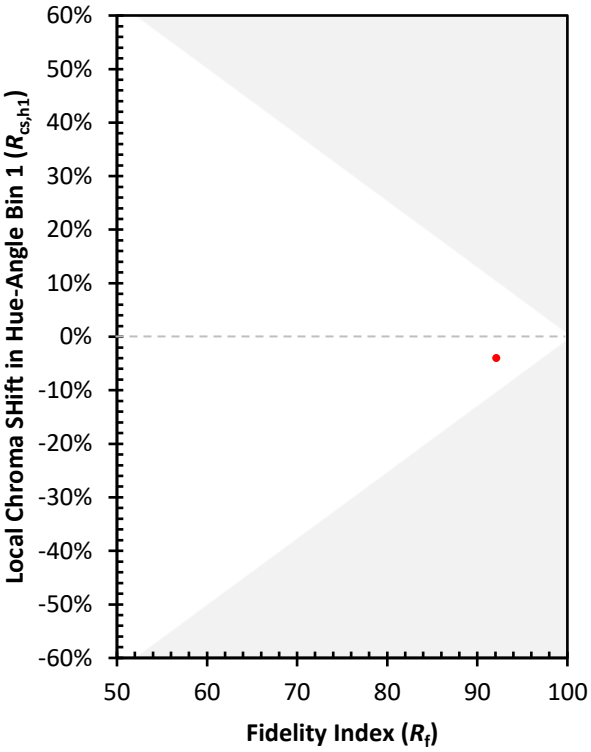



REPORT NUMBER: SP3-2508-516-10

# TM-30-18

## Measure Comparisons




(END OF REPORT)