

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: CORELITE

Report Number: P1217233

Luminaire Tested: 14-ID2-60-CNV-L830-U

Issue Date: 12/5/2025

**Test Information**

Test Method: LM-79-2019  
Report Number: P1217233  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-2508-507-11)  
Test Lab: INNOVATION CENTER  
Issue Date: 12/5/2025  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: CORELITE  
Catalog Number: 14-ID2-60-CNV-L830-U  
Description: 1X4 IN DEPTH TROFFER WITH 2INCH CURVE DROP LENS  
Light Source: 3000K CCT, 80 CRI LEDS  
Ballast/Driver: ELECTRONIC DRIVER

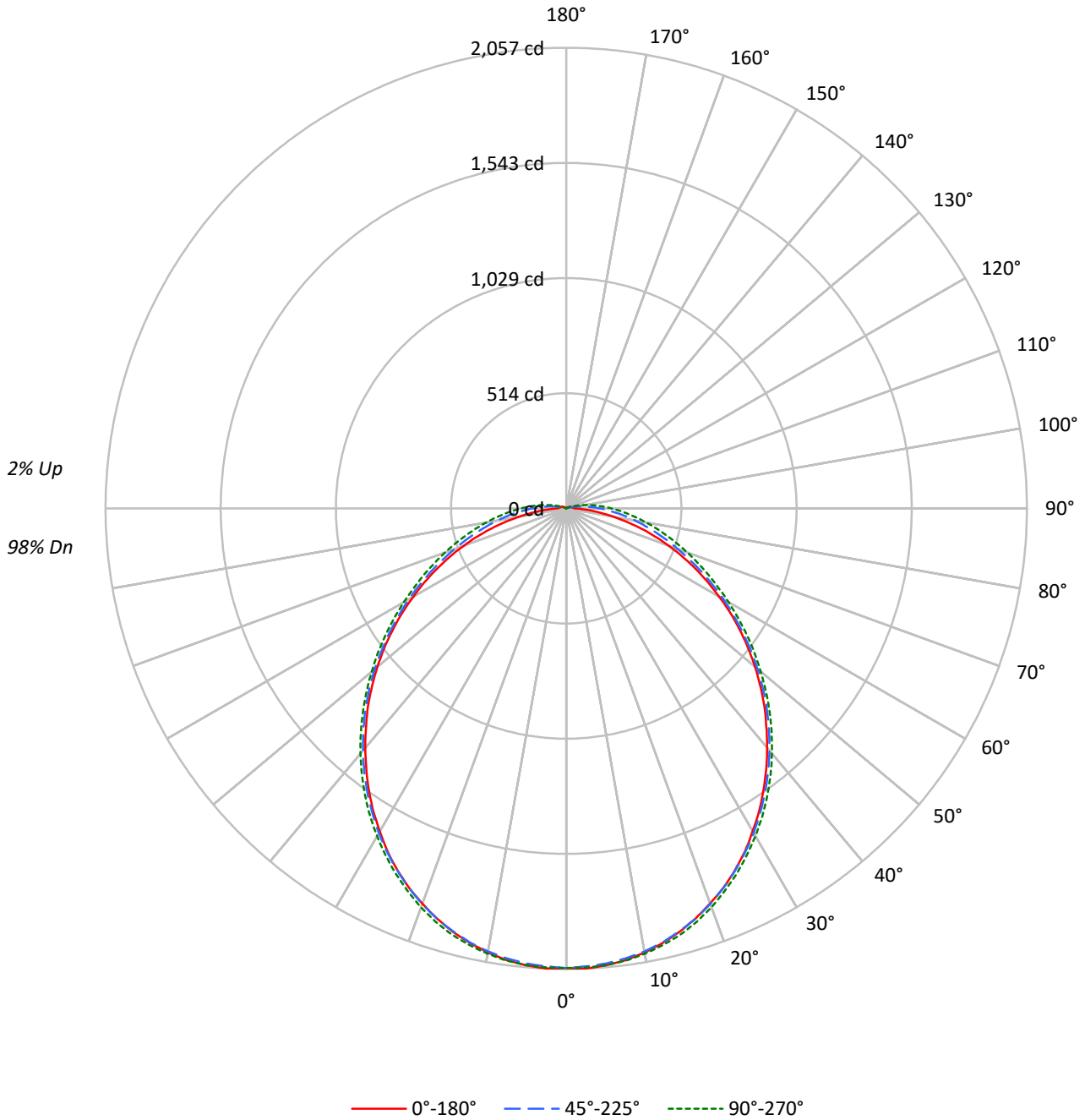
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 5842.4 lumens  
Efficiency: N/A  
Efficacy: 109.4 lumens/watt  
Spacing Criteria (0/90/45): 1.21 / 1.22 / 1.33  
Luminous Opening: Rectangular w/ Sides (W: 1' x L: 4' x H: 0.16')  
CIE Type: Direct  
  
Input Watts (W): 53.4  
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



TEST NUMBER: P1217233  
CATALOG NUMBER: 14-ID2-60-CNV-L830-U

### Luminous Intensity Polar Plot





TEST NUMBER: P1217233  
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**COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:**

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |    |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|
| RF  | 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   | 118 | 118 | 118 | 118 | 115 | 115 | 115 | 115 | 110 | 110 | 110 | 105 | 105 | 105 | 100 | 100 | 100 | 98 |
| 1   | 107 | 102 | 98  | 94  | 104 | 100 | 96  | 92  | 95  | 92  | 88  | 91  | 88  | 85  | 87  | 84  | 82  | 80 |
| 2   | 98  | 89  | 82  | 76  | 95  | 87  | 80  | 75  | 83  | 77  | 73  | 79  | 75  | 71  | 76  | 72  | 69  | 66 |
| 3   | 89  | 78  | 70  | 63  | 86  | 76  | 69  | 62  | 73  | 66  | 61  | 70  | 64  | 60  | 67  | 62  | 58  | 56 |
| 4   | 81  | 69  | 60  | 54  | 79  | 68  | 59  | 53  | 65  | 58  | 52  | 62  | 56  | 51  | 60  | 54  | 50  | 48 |
| 5   | 75  | 62  | 53  | 46  | 73  | 61  | 52  | 46  | 58  | 51  | 45  | 56  | 49  | 44  | 54  | 48  | 44  | 41 |
| 6   | 69  | 56  | 47  | 40  | 67  | 55  | 46  | 40  | 53  | 45  | 39  | 51  | 44  | 39  | 49  | 43  | 38  | 36 |
| 7   | 64  | 51  | 42  | 36  | 62  | 50  | 41  | 35  | 48  | 40  | 35  | 46  | 40  | 35  | 45  | 39  | 34  | 32 |
| 8   | 60  | 46  | 38  | 32  | 58  | 45  | 37  | 32  | 44  | 37  | 31  | 42  | 36  | 31  | 41  | 35  | 31  | 29 |
| 9   | 56  | 42  | 34  | 29  | 54  | 42  | 34  | 29  | 40  | 33  | 28  | 39  | 33  | 28  | 38  | 32  | 28  | 26 |
| 10  | 52  | 39  | 31  | 26  | 51  | 39  | 31  | 26  | 37  | 30  | 26  | 36  | 30  | 25  | 35  | 29  | 25  | 23 |

**AVERAGE LUMINANCE (cd/sqm):**

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 5524 | 5524 | 5524 |
| 5°  | 5513 | 5443 | 5453 |
| 10° | 5463 | 5355 | 5367 |
| 15° | 5393 | 5247 | 5263 |
| 20° | 5301 | 5120 | 5130 |
| 25° | 5196 | 4971 | 4975 |
| 30° | 5056 | 4808 | 4806 |
| 35° | 4909 | 4627 | 4625 |
| 40° | 4744 | 4432 | 4426 |
| 45° | 4582 | 4224 | 4211 |
| 50° | 4396 | 3997 | 3985 |
| 55° | 4198 | 3749 | 3759 |
| 60° | 3970 | 3503 | 3526 |
| 65° | 3727 | 3244 | 3315 |
| 70° | 3447 | 3000 | 3140 |
| 75° | 3118 | 2814 | 3005 |
| 80° | 2692 | 2678 | 2944 |
| 85° | 2352 | 2632 | 3012 |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 4582 cd/sqm



TEST NUMBER: P1217233  
 CATALOG NUMBER: 14-ID2-60-CNV-L830-U

**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 194.1  | 3.3       |
| 10°-20°   | 552.3  | 9.5       |
| 20°-30°   | 823.0  | 14.1      |
| 30°-40°   | 968.5  | 16.6      |
| 40°-50°   | 977.2  | 16.7      |
| 50°-60°   | 861.5  | 14.7      |
| 60°-70°   | 660.0  | 11.3      |
| 70°-80°   | 432.2  | 7.4       |
| 80°-90°   | 231.1  | 4.0       |
| 90°-100°  | 98.2   | 1.7       |
| 100°-110° | 31.4   | 0.5       |
| 110°-120° | 7.4    | 0.1       |
| 120°-130° | 3.4    | 0.1       |
| 130°-140° | 1.7    | 0.0       |
| 140°-150° | 0.6    | 0.0       |
| 150°-160° | 0.0    | 0.0       |
| 160°-170° | 0.0    | 0.0       |
| 170°-180° | 0.0    | 0.0       |
| 0°-30°    | 1569.4 | 26.9      |
| 0°-40°    | 2537.9 | 43.4      |
| 0°-60°    | 4376.6 | 74.9      |
| 0°-90°    | 5699.8 | 97.6      |
| 90°-120°  | 136.9  | 2.3       |
| 90°-150°  | 142.6  | 2.4       |
| 90°-180°  | 143.0  | 2.4       |
| 0°-180°   | 5842.4 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 2053 | 2053  | 2053 | 2053  | 2053 |      |
| 5°   | 2048 | 2045  | 2040 | 2041  | 2047 | 194  |
| 15°  | 1956 | 1955  | 1955 | 1962  | 1970 | 552  |
| 25°  | 1783 | 1780  | 1785 | 1794  | 1800 | 821  |
| 35°  | 1536 | 1536  | 1548 | 1561  | 1566 | 960  |
| 45°  | 1252 | 1253  | 1267 | 1282  | 1284 | 965  |
| 55°  | 946  | 946   | 961  | 980   | 984  | 846  |
| 65°  | 636  | 638   | 664  | 688   | 699  | 630  |
| 75°  | 345  | 358   | 414  | 451   | 462  | 365  |
| 85°  | 111  | 152   | 223  | 265   | 276  | 112  |
| 90°  | 39   | 86    | 150  | 190   | 201  | 25   |
| 95°  | 32   | 44    | 92   | 128   | 140  | 25   |
| 105° | 23   | 18    | 20   | 39    | 47   | 24   |
| 115° | 15   | 12    | 6    | 0     | 0    | 15   |
| 125° | 9    | 7     | 3    | 0     | 0    | 8    |
| 135° | 5    | 4     | 2    | 0     | 0    | 4    |
| 145° | 3    | 2     | 0    | 0     | 0    | 2    |
| 155° | 0    | 0     | 0    | 0     | 0    | 0    |
| 165° | 0    | 0     | 0    | 0     | 0    | 0    |
| 175° | 0    | 0     | 0    | 0     | 0    | 0    |
| 180° | 0    | 0     | 0    | 0     | 0    | 0    |



TEST NUMBER: P1217233  
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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 2052.8 | 2052.8 | 2052.8 | 2052.8 | 2052.8 |
| 2.5°   | 2056.7 | 2053.8 | 2046.9 | 2048.9 | 2051.8 |
| 5°     | 2047.9 | 2044.9 | 2040.0 | 2041.0 | 2046.9 |
| 7.5°   | 2035.1 | 2031.2 | 2027.2 | 2030.2 | 2037.1 |
| 10°    | 2013.5 | 2011.5 | 2008.6 | 2012.5 | 2019.4 |
| 12.5°  | 1988.0 | 1986.0 | 1985.0 | 1989.9 | 1997.8 |
| 15°    | 1956.5 | 1954.6 | 1954.6 | 1962.4 | 1970.3 |
| 17.5°  | 1920.2 | 1919.2 | 1921.2 | 1930.0 | 1935.9 |
| 20°    | 1878.0 | 1877.0 | 1879.9 | 1888.8 | 1895.6 |
| 22.5°  | 1833.8 | 1831.8 | 1834.7 | 1842.6 | 1849.5 |
| 25°    | 1782.7 | 1779.7 | 1784.6 | 1793.5 | 1800.4 |
| 27.5°  | 1727.7 | 1722.8 | 1730.6 | 1740.4 | 1746.3 |
| 30°    | 1664.8 | 1665.8 | 1673.7 | 1683.5 | 1689.4 |
| 32.5°  | 1602.9 | 1602.0 | 1611.8 | 1623.6 | 1629.5 |
| 35°    | 1536.1 | 1536.1 | 1547.9 | 1560.7 | 1565.6 |
| 37.5°  | 1466.4 | 1469.4 | 1481.1 | 1492.9 | 1498.8 |
| 40°    | 1395.7 | 1399.6 | 1411.4 | 1424.2 | 1429.1 |
| 42.5°  | 1323.0 | 1326.9 | 1339.7 | 1353.5 | 1357.4 |
| 45°    | 1252.3 | 1253.3 | 1267.0 | 1281.8 | 1283.7 |
| 47.5°  | 1175.7 | 1176.7 | 1191.4 | 1206.1 | 1209.1 |
| 50°    | 1100.1 | 1101.0 | 1115.8 | 1131.5 | 1133.4 |
| 52.5°  | 1023.4 | 1024.4 | 1037.2 | 1055.9 | 1059.8 |
| 55°    | 945.9  | 945.9  | 960.6  | 980.2  | 984.2  |
| 57.5°  | 868.3  | 868.3  | 884.0  | 904.6  | 909.5  |
| 60°    | 788.7  | 790.7  | 810.3  | 830.0  | 836.8  |
| 62.5°  | 712.1  | 714.1  | 735.7  | 756.3  | 765.1  |
| 65°    | 635.5  | 638.4  | 664.0  | 688.5  | 699.3  |
| 67.5°  | 560.8  | 564.8  | 594.2  | 625.7  | 635.5  |
| 70°    | 486.2  | 494.0  | 529.4  | 563.8  | 574.6  |
| 72.5°  | 414.5  | 423.3  | 470.5  | 506.8  | 516.6  |
| 75°    | 344.7  | 358.5  | 413.5  | 450.8  | 461.6  |
| 77.5°  | 277.0  | 297.6  | 360.5  | 400.7  | 410.6  |
| 80°    | 213.1  | 243.6  | 311.4  | 351.6  | 362.4  |
| 82.5°  | 159.1  | 193.5  | 266.2  | 307.4  | 317.2  |
| 85°    | 111.0  | 152.2  | 223.0  | 265.2  | 276.0  |
| 87.5°  | 71.7   | 116.9  | 184.7  | 225.9  | 237.7  |
| 90°    | 39.3   | 86.4   | 150.3  | 189.6  | 201.3  |
| 92.5°  | 35.4   | 62.9   | 119.8  | 157.2  | 168.9  |
| 95°    | 32.4   | 44.2   | 92.3   | 127.7  | 139.5  |
| 97.5°  | 29.5   | 29.5   | 68.8   | 101.2  | 112.0  |
| 100°   | 27.5   | 21.6   | 49.1   | 77.6   | 88.4   |
| 102.5° | 24.6   | 19.6   | 32.4   | 57.0   | 66.8   |
| 105°   | 22.6   | 17.7   | 19.6   | 39.3   | 47.1   |
| 107.5° | 20.6   | 15.7   | 9.8    | 24.6   | 31.4   |
| 110°   | 18.7   | 14.7   | 7.9    | 11.8   | 18.7   |



TEST NUMBER: P1217233  
 CATALOG NUMBER: 14-ID2-60-CNV-L830-U

**CANDELA DISTRIBUTION (continued):**

|        | 0°   | 22.5° | 45° | 67.5° | 90° |
|--------|------|-------|-----|-------|-----|
| 112.5° | 16.7 | 12.8  | 6.9 | 2.9   | 6.9 |
| 115°   | 14.7 | 11.8  | 5.9 | 0.0   | 0.0 |
| 117.5° | 12.8 | 10.8  | 4.9 | 0.0   | 0.0 |
| 120°   | 11.8 | 8.8   | 4.9 | 0.0   | 0.0 |
| 122.5° | 10.8 | 7.9   | 3.9 | 0.0   | 0.0 |
| 125°   | 8.8  | 6.9   | 2.9 | 0.0   | 0.0 |
| 127.5° | 7.9  | 5.9   | 2.9 | 0.0   | 0.0 |
| 130°   | 6.9  | 5.9   | 2.0 | 0.0   | 0.0 |
| 132.5° | 5.9  | 4.9   | 2.0 | 0.0   | 0.0 |
| 135°   | 4.9  | 3.9   | 2.0 | 0.0   | 0.0 |
| 137.5° | 4.9  | 3.9   | 1.0 | 0.0   | 0.0 |
| 140°   | 3.9  | 2.9   | 1.0 | 0.0   | 0.0 |
| 142.5° | 2.9  | 2.0   | 1.0 | 0.0   | 0.0 |
| 145°   | 2.9  | 2.0   | 0.0 | 0.0   | 0.0 |
| 147.5° | 2.0  | 2.0   | 0.0 | 0.0   | 0.0 |
| 150°   | 2.0  | 1.0   | 0.0 | 0.0   | 0.0 |
| 152.5° | 0.0  | 0.0   | 0.0 | 0.0   | 0.0 |
| 155°   | 0.0  | 0.0   | 0.0 | 0.0   | 0.0 |
| 157.5° | 0.0  | 0.0   | 0.0 | 0.0   | 0.0 |
| 160°   | 0.0  | 0.0   | 0.0 | 0.0   | 0.0 |
| 162.5° | 0.0  | 0.0   | 0.0 | 0.0   | 0.0 |
| 165°   | 0.0  | 0.0   | 0.0 | 0.0   | 0.0 |
| 167.5° | 0.0  | 0.0   | 0.0 | 0.0   | 0.0 |
| 170°   | 0.0  | 0.0   | 0.0 | 0.0   | 0.0 |
| 172.5° | 0.0  | 0.0   | 0.0 | 0.0   | 0.0 |
| 175°   | 0.0  | 0.0   | 0.0 | 0.0   | 0.0 |
| 177.5° | 0.0  | 0.0   | 0.0 | 0.0   | 0.0 |
| 180°   | 0.0  | 0.0   | 0.0 | 0.0   | 0.0 |

TEST NUMBER: P1217233  
 CATALOG NUMBER: 14-ID2-60-CNV-L830-U

**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 | 16.00            | 17.59 | 16.41 | 17.96 | 18.34 | 16.65          | 18.24 | 17.05 | 18.60 | 18.98 |
|                 | 3H   | 17.60            | 19.05 | 18.02 | 19.42 | 19.84 | 18.62          | 20.07 | 19.04 | 20.44 | 20.86 |
|                 | 4H   | 18.17            | 19.54 | 18.61 | 19.93 | 20.37 | 19.52          | 20.88 | 19.95 | 21.28 | 21.71 |
|                 | 6H   | 18.57            | 19.84 | 19.02 | 20.25 | 20.70 | 20.39          | 21.66 | 20.84 | 22.07 | 22.52 |
|                 | 8H   | 18.69            | 19.90 | 19.15 | 20.34 | 20.80 | 20.81          | 22.03 | 21.27 | 22.46 | 22.92 |
|                 | 12H  | 18.77            | 19.93 | 19.24 | 20.36 | 20.85 | 21.25          | 22.42 | 21.72 | 22.85 | 23.33 |
| 4H              | 2H   | 16.64            | 18.01 | 17.08 | 18.41 | 18.84 | 17.16          | 18.52 | 17.59 | 18.92 | 19.36 |
|                 | 3H   | 18.47            | 19.62 | 18.91 | 20.06 | 20.52 | 19.37          | 20.52 | 19.81 | 20.96 | 21.42 |
|                 | 4H   | 19.16            | 20.21 | 19.63 | 20.67 | 21.16 | 20.42          | 21.47 | 20.89 | 21.93 | 22.42 |
|                 | 6H   | 19.68            | 20.60 | 20.17 | 21.09 | 21.60 | 21.47          | 22.40 | 21.96 | 22.88 | 23.39 |
|                 | 8H   | 19.85            | 20.72 | 20.35 | 21.20 | 21.72 | 21.99          | 22.85 | 22.48 | 23.34 | 23.86 |
|                 | 12H  | 19.98            | 20.76 | 20.49 | 21.28 | 21.80 | 22.53          | 23.32 | 23.05 | 23.83 | 24.36 |
| 8H              | 4H   | 19.58            | 20.45 | 20.08 | 20.94 | 21.46 | 20.69          | 21.56 | 21.19 | 22.05 | 22.57 |
|                 | 6H   | 20.25            | 20.98 | 20.78 | 21.52 | 22.04 | 21.91          | 22.64 | 22.44 | 23.17 | 23.70 |
|                 | 8H   | 20.51            | 21.17 | 21.05 | 21.71 | 22.25 | 22.56          | 23.22 | 23.10 | 23.76 | 24.30 |
|                 | 12H  | 20.72            | 21.30 | 21.26 | 21.84 | 22.45 | 23.27          | 23.86 | 23.81 | 24.39 | 25.00 |
| 12H             | 4H   | 19.68            | 20.46 | 20.19 | 20.98 | 21.50 | 20.71          | 21.50 | 21.23 | 22.02 | 22.54 |
|                 | 6H   | 20.41            | 21.07 | 20.95 | 21.61 | 22.15 | 21.97          | 22.63 | 22.51 | 23.18 | 23.72 |
|                 | 8H   | 20.74            | 21.33 | 21.29 | 21.86 | 22.47 | 22.69          | 23.28 | 23.23 | 23.81 | 24.42 |



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

Corelite

Report Number: SP1-2506-458-3

Test Date: 07/24/2025

Luminaire Tested: 22ID2-55-CFR1-L830-U

Data in this report applies to families of products including 22ID2-55-CFR1-L830-U

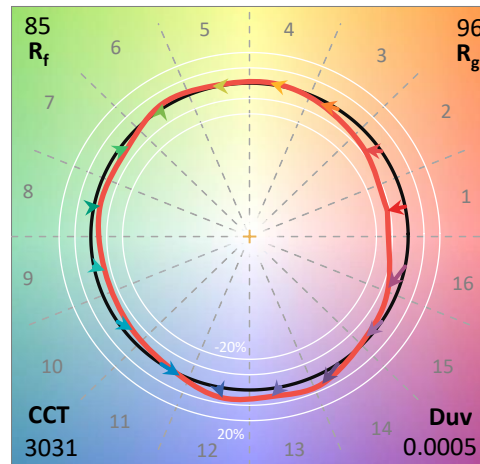
**Test Information**

Test Method: LM-79-2019  
 Report Number: SP1-2506-458-3  
 Test Lab: COOPER LIGHTING SOLUTIONS  
 Photometer: SP1 - 76IN SPHERE  
 Measurement Geometry: 4π  
 Issue Date: 08/27/2025  
 Manufacturer: COOPER LIGHTING SOLUTIONS  
 Product Line: Corelite  
 Catalog Number: **22ID2-55-CFR1-L830-U**  
 Description: 2X2 CGTX WITH INDEPTH FRAME AND CFR1 LENS - 5500 LUMEN 3000K 80CRI

**Spectral Parameters**

CCT (K): 3031  
 CIE u': 0.2493  
 CIE v': 0.5215  
 Duv: 0.0005  
 CIE x: 0.4355  
 CIE y: 0.4049  
 CIE z: 0.1596  
 Peak Wavelength (nm): 603  
 Dominant Wavelength (nm): 582  
 Purity: 52.24762  
 Rf: 84.8  
 Rg: 95.8

|           |      |      |      |
|-----------|------|------|------|
| CRI (Ra): | 82.5 |      |      |
| R1:       | 80.7 | R9:  | 5.8  |
| R2:       | 90.5 | R10: | 78.6 |
| R3:       | 96.7 | R11: | 80.2 |
| R4:       | 80.7 | R12: | 69.8 |
| R5:       | 80.9 | R13: | 83.0 |
| R6:       | 88.5 | R14: | 98.8 |
| R7:       | 83.0 | R15: | 73.0 |
| R8:       | 58.8 |      |      |



**Test Conditions**

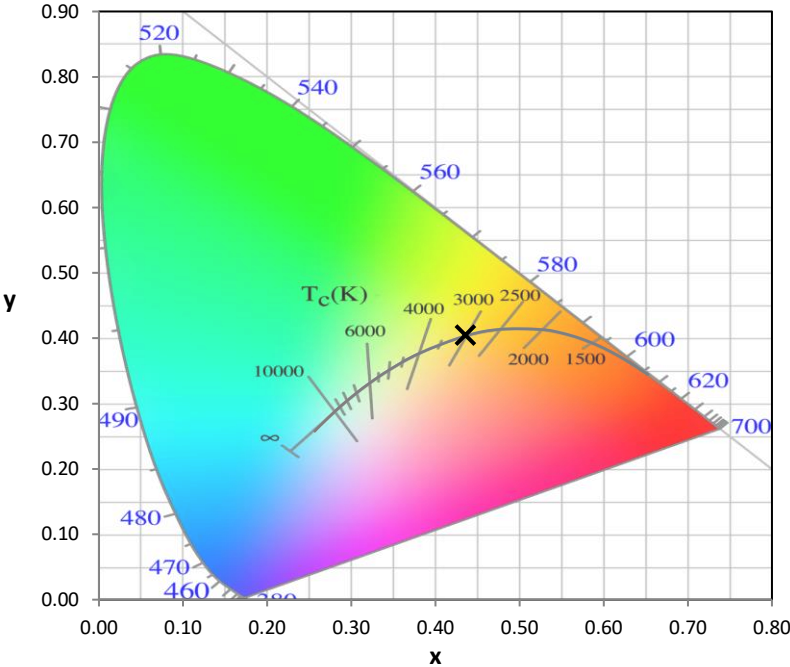
Stabilization Time: 38M  
 Operation Time: 1H 38M  
 Sphere Temperature (°C): 24.0

REPORT NUMBER: SP1-2506-458-3

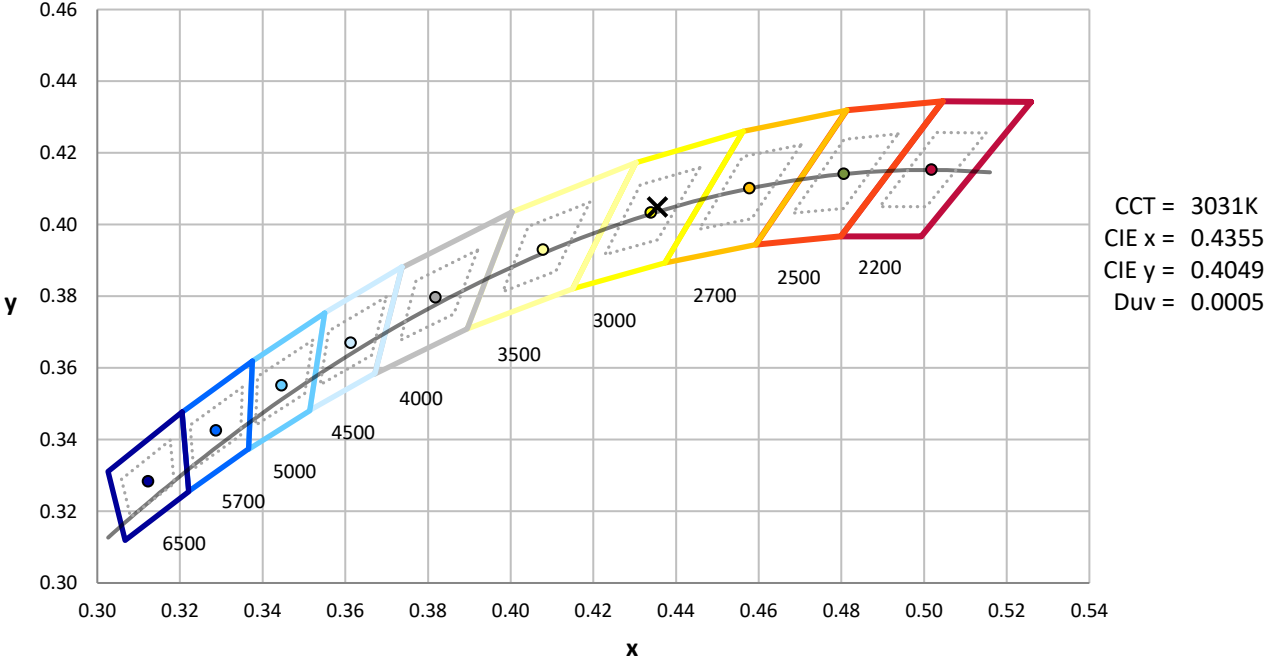
| Measurement and Test Equipment |                       |                  |                      |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument                     | Identification Number | Calibration Date | Calibration Due Date |
| 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: SP1-2506-458-3

CIE 1931 Chromaticity Diagram



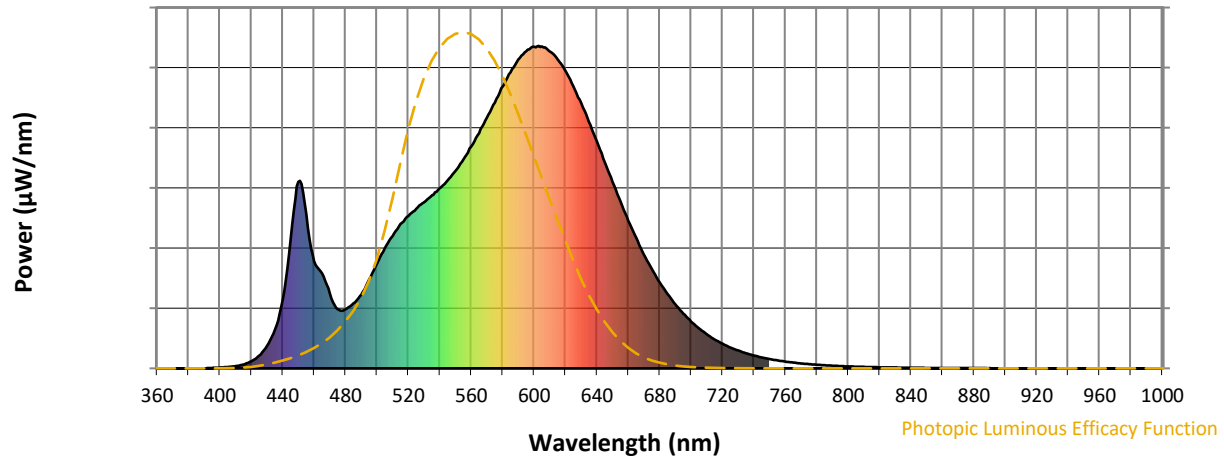
CIE 1931 Chromaticity Diagram with 2017 ANSI 7-Step and 4-Step Quadrangles



Point lies inside the ANSI 3000K 4-step quadrangle

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**Photopic Flux vs. Wavelength**

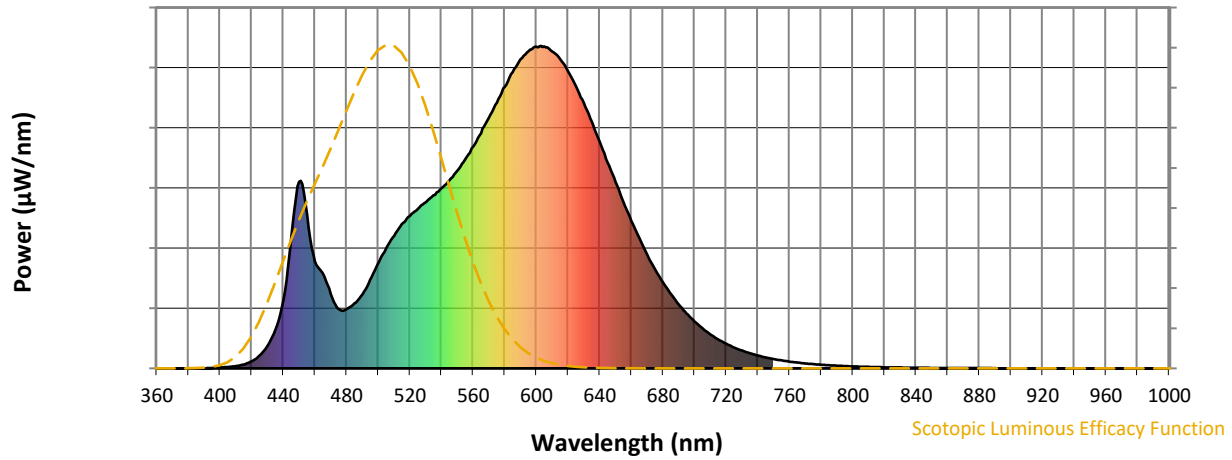


**Photopic Lumens: NR**

| $\lambda$<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>( $\phi$ /nm) | $\lambda$<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>( $\phi$ /nm) | $\lambda$<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>( $\phi$ /nm) | $\lambda$<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>( $\phi$ /nm) | $\lambda$<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>( $\phi$ /nm) |
|-------------------|-----------------------------|-------------------------|-------------------|-----------------------------|-------------------------|-------------------|-----------------------------|-------------------------|-------------------|-----------------------------|-------------------------|-------------------|-----------------------------|-------------------------|
| 360               | 0                           | NR                      | 490               | 229                         | NR                      | 620               | 922                         | NR                      | 750               | 29                          | NR                      | 880               | 1                           | NR                      |
| 365               | 0                           | NR                      | 495               | 275                         | NR                      | 625               | 875                         | NR                      | 755               | 25                          | NR                      | 885               | 1                           | NR                      |
| 370               | 0                           | NR                      | 500               | 326                         | NR                      | 630               | 822                         | NR                      | 760               | 21                          | NR                      | 890               | 1                           | NR                      |
| 375               | 0                           | NR                      | 505               | 372                         | NR                      | 635               | 764                         | NR                      | 765               | 18                          | NR                      | 895               | 0                           | NR                      |
| 380               | 0                           | NR                      | 510               | 411                         | NR                      | 640               | 704                         | NR                      | 770               | 15                          | NR                      | 900               | 0                           | NR                      |
| 385               | 0                           | NR                      | 515               | 447                         | NR                      | 645               | 638                         | NR                      | 775               | 13                          | NR                      | 905               | 0                           | NR                      |
| 390               | 0                           | NR                      | 520               | 473                         | NR                      | 650               | 577                         | NR                      | 780               | 11                          | NR                      | 910               | 0                           | NR                      |
| 395               | 1                           | NR                      | 525               | 495                         | NR                      | 655               | 517                         | NR                      | 785               | 10                          | NR                      | 915               | 0                           | NR                      |
| 400               | 3                           | NR                      | 530               | 515                         | NR                      | 660               | 457                         | NR                      | 790               | 8                           | NR                      | 920               | 0                           | NR                      |
| 405               | 4                           | NR                      | 535               | 537                         | NR                      | 665               | 404                         | NR                      | 795               | 7                           | NR                      | 925               | 0                           | NR                      |
| 410               | 7                           | NR                      | 540               | 559                         | NR                      | 670               | 353                         | NR                      | 800               | 6                           | NR                      | 930               | 0                           | NR                      |
| 415               | 12                          | NR                      | 545               | 584                         | NR                      | 675               | 307                         | NR                      | 805               | 5                           | NR                      | 935               | 0                           | NR                      |
| 420               | 22                          | NR                      | 550               | 612                         | NR                      | 680               | 267                         | NR                      | 810               | 5                           | NR                      | 940               | 0                           | NR                      |
| 425               | 40                          | NR                      | 555               | 648                         | NR                      | 685               | 230                         | NR                      | 815               | 4                           | NR                      | 945               | 0                           | NR                      |
| 430               | 69                          | NR                      | 560               | 688                         | NR                      | 690               | 199                         | NR                      | 820               | 3                           | NR                      | 950               | 0                           | NR                      |
| 435               | 120                         | NR                      | 565               | 730                         | NR                      | 695               | 170                         | NR                      | 825               | 3                           | NR                      | 955               | 0                           | NR                      |
| 440               | 212                         | NR                      | 570               | 777                         | NR                      | 700               | 145                         | NR                      | 830               | 3                           | NR                      | 960               | 0                           | NR                      |
| 445               | 400                         | NR                      | 575               | 824                         | NR                      | 705               | 124                         | NR                      | 835               | 2                           | NR                      | 965               | 0                           | NR                      |
| 450               | 578                         | NR                      | 580               | 873                         | NR                      | 710               | 106                         | NR                      | 840               | 2                           | NR                      | 970               | 0                           | NR                      |
| 455               | 478                         | NR                      | 585               | 918                         | NR                      | 715               | 90                          | NR                      | 845               | 2                           | NR                      | 975               | 0                           | NR                      |
| 460               | 332                         | NR                      | 590               | 958                         | NR                      | 720               | 76                          | NR                      | 850               | 1                           | NR                      | 980               | 0                           | NR                      |
| 465               | 295                         | NR                      | 595               | 983                         | NR                      | 725               | 65                          | NR                      | 855               | 1                           | NR                      | 985               | 0                           | NR                      |
| 470               | 231                         | NR                      | 600               | 997                         | NR                      | 730               | 55                          | NR                      | 860               | 1                           | NR                      | 990               | 0                           | NR                      |
| 475               | 183                         | NR                      | 605               | 998                         | NR                      | 735               | 47                          | NR                      | 865               | 1                           | NR                      | 995               | 0                           | NR                      |
| 480               | 184                         | NR                      | 610               | 982                         | NR                      | 740               | 40                          | NR                      | 870               | 1                           | NR                      | 1000              | 0                           | NR                      |
| 485               | 201                         | NR                      | 615               | 958                         | NR                      | 745               | 34                          | NR                      | 875               | 1                           | NR                      |                   |                             |                         |

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**Scotopic Flux vs. Wavelength**



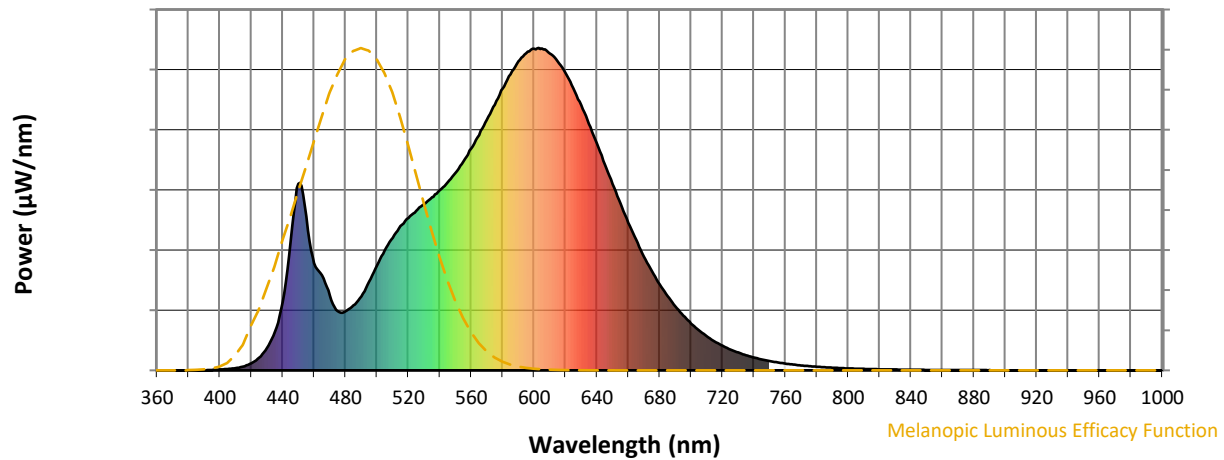
**Scotopic Lumens: NR**

**S/P: 1.35**

| λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) |
|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|
| 360    | 0                        | NR            | 490    | 229                      | NR            | 620    | 922                      | NR            | 750    | 29                       | NR            | 880    | 1                        | NR            |
| 365    | 0                        | NR            | 495    | 275                      | NR            | 625    | 875                      | NR            | 755    | 25                       | NR            | 885    | 1                        | NR            |
| 370    | 0                        | NR            | 500    | 326                      | NR            | 630    | 822                      | NR            | 760    | 21                       | NR            | 890    | 1                        | NR            |
| 375    | 0                        | NR            | 505    | 372                      | NR            | 635    | 764                      | NR            | 765    | 18                       | NR            | 895    | 0                        | NR            |
| 380    | 0                        | NR            | 510    | 411                      | NR            | 640    | 704                      | NR            | 770    | 15                       | NR            | 900    | 0                        | NR            |
| 385    | 0                        | NR            | 515    | 447                      | NR            | 645    | 638                      | NR            | 775    | 13                       | NR            | 905    | 0                        | NR            |
| 390    | 0                        | NR            | 520    | 473                      | NR            | 650    | 577                      | NR            | 780    | 11                       | NR            | 910    | 0                        | NR            |
| 395    | 1                        | NR            | 525    | 495                      | NR            | 655    | 517                      | NR            | 785    | 10                       | NR            | 915    | 0                        | NR            |
| 400    | 3                        | NR            | 530    | 515                      | NR            | 660    | 457                      | NR            | 790    | 8                        | NR            | 920    | 0                        | NR            |
| 405    | 4                        | NR            | 535    | 537                      | NR            | 665    | 404                      | NR            | 795    | 7                        | NR            | 925    | 0                        | NR            |
| 410    | 7                        | NR            | 540    | 559                      | NR            | 670    | 353                      | NR            | 800    | 6                        | NR            | 930    | 0                        | NR            |
| 415    | 12                       | NR            | 545    | 584                      | NR            | 675    | 307                      | NR            | 805    | 5                        | NR            | 935    | 0                        | NR            |
| 420    | 22                       | NR            | 550    | 612                      | NR            | 680    | 267                      | NR            | 810    | 5                        | NR            | 940    | 0                        | NR            |
| 425    | 40                       | NR            | 555    | 648                      | NR            | 685    | 230                      | NR            | 815    | 4                        | NR            | 945    | 0                        | NR            |
| 430    | 69                       | NR            | 560    | 688                      | NR            | 690    | 199                      | NR            | 820    | 3                        | NR            | 950    | 0                        | NR            |
| 435    | 120                      | NR            | 565    | 730                      | NR            | 695    | 170                      | NR            | 825    | 3                        | NR            | 955    | 0                        | NR            |
| 440    | 212                      | NR            | 570    | 777                      | NR            | 700    | 145                      | NR            | 830    | 3                        | NR            | 960    | 0                        | NR            |
| 445    | 400                      | NR            | 575    | 824                      | NR            | 705    | 124                      | NR            | 835    | 2                        | NR            | 965    | 0                        | NR            |
| 450    | 578                      | NR            | 580    | 873                      | NR            | 710    | 106                      | NR            | 840    | 2                        | NR            | 970    | 0                        | NR            |
| 455    | 478                      | NR            | 585    | 918                      | NR            | 715    | 90                       | NR            | 845    | 2                        | NR            | 975    | 0                        | NR            |
| 460    | 332                      | NR            | 590    | 958                      | NR            | 720    | 76                       | NR            | 850    | 1                        | NR            | 980    | 0                        | NR            |
| 465    | 295                      | NR            | 595    | 983                      | NR            | 725    | 65                       | NR            | 855    | 1                        | NR            | 985    | 0                        | NR            |
| 470    | 231                      | NR            | 600    | 997                      | NR            | 730    | 55                       | NR            | 860    | 1                        | NR            | 990    | 0                        | NR            |
| 475    | 183                      | NR            | 605    | 998                      | NR            | 735    | 47                       | NR            | 865    | 1                        | NR            | 995    | 0                        | NR            |
| 480    | 184                      | NR            | 610    | 982                      | NR            | 740    | 40                       | NR            | 870    | 1                        | NR            | 1000   | 0                        | NR            |
| 485    | 201                      | NR            | 615    | 958                      | NR            | 745    | 34                       | NR            | 875    | 1                        | NR            |        |                          |               |

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**Melanopic Flux vs. Wavelength**



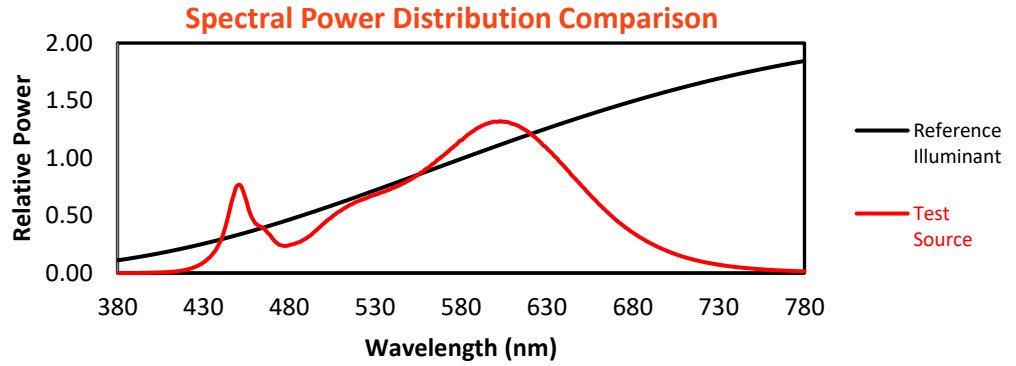
**Melanopic Lumens: NR**

**M/P: 2.59**

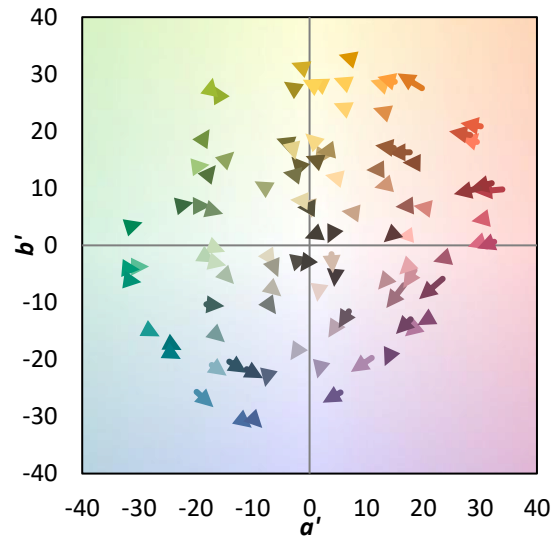
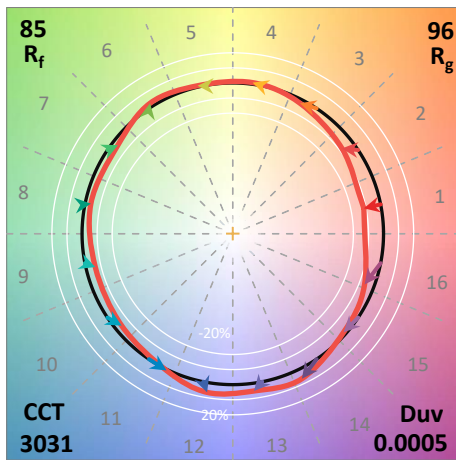
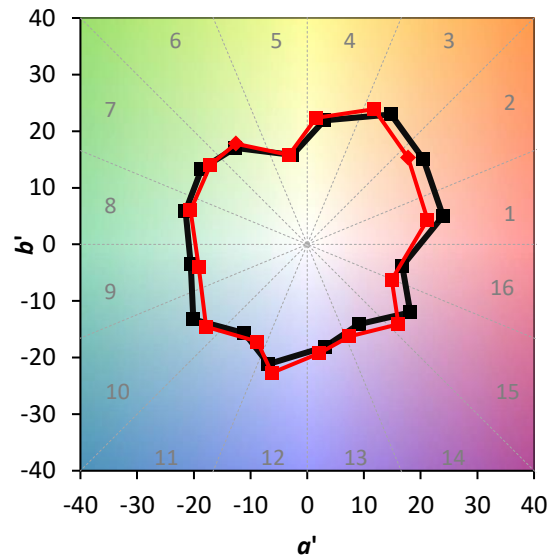
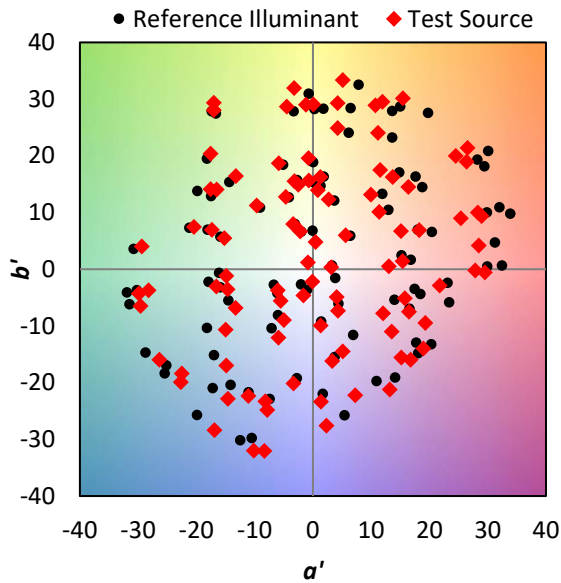
| λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) |
|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|
| 360    | 0                        | NR            | 490    | 229                      | NR            | 620    | 922                      | NR            | 750    | 29                       | NR            | 880    | 1                        | NR            |
| 365    | 0                        | NR            | 495    | 275                      | NR            | 625    | 875                      | NR            | 755    | 25                       | NR            | 885    | 1                        | NR            |
| 370    | 0                        | NR            | 500    | 326                      | NR            | 630    | 822                      | NR            | 760    | 21                       | NR            | 890    | 1                        | NR            |
| 375    | 0                        | NR            | 505    | 372                      | NR            | 635    | 764                      | NR            | 765    | 18                       | NR            | 895    | 0                        | NR            |
| 380    | 0                        | NR            | 510    | 411                      | NR            | 640    | 704                      | NR            | 770    | 15                       | NR            | 900    | 0                        | NR            |
| 385    | 0                        | NR            | 515    | 447                      | NR            | 645    | 638                      | NR            | 775    | 13                       | NR            | 905    | 0                        | NR            |
| 390    | 0                        | NR            | 520    | 473                      | NR            | 650    | 577                      | NR            | 780    | 11                       | NR            | 910    | 0                        | NR            |
| 395    | 1                        | NR            | 525    | 495                      | NR            | 655    | 517                      | NR            | 785    | 10                       | NR            | 915    | 0                        | NR            |
| 400    | 3                        | NR            | 530    | 515                      | NR            | 660    | 457                      | NR            | 790    | 8                        | NR            | 920    | 0                        | NR            |
| 405    | 4                        | NR            | 535    | 537                      | NR            | 665    | 404                      | NR            | 795    | 7                        | NR            | 925    | 0                        | NR            |
| 410    | 7                        | NR            | 540    | 559                      | NR            | 670    | 353                      | NR            | 800    | 6                        | NR            | 930    | 0                        | NR            |
| 415    | 12                       | NR            | 545    | 584                      | NR            | 675    | 307                      | NR            | 805    | 5                        | NR            | 935    | 0                        | NR            |
| 420    | 22                       | NR            | 550    | 612                      | NR            | 680    | 267                      | NR            | 810    | 5                        | NR            | 940    | 0                        | NR            |
| 425    | 40                       | NR            | 555    | 648                      | NR            | 685    | 230                      | NR            | 815    | 4                        | NR            | 945    | 0                        | NR            |
| 430    | 69                       | NR            | 560    | 688                      | NR            | 690    | 199                      | NR            | 820    | 3                        | NR            | 950    | 0                        | NR            |
| 435    | 120                      | NR            | 565    | 730                      | NR            | 695    | 170                      | NR            | 825    | 3                        | NR            | 955    | 0                        | NR            |
| 440    | 212                      | NR            | 570    | 777                      | NR            | 700    | 145                      | NR            | 830    | 3                        | NR            | 960    | 0                        | NR            |
| 445    | 400                      | NR            | 575    | 824                      | NR            | 705    | 124                      | NR            | 835    | 2                        | NR            | 965    | 0                        | NR            |
| 450    | 578                      | NR            | 580    | 873                      | NR            | 710    | 106                      | NR            | 840    | 2                        | NR            | 970    | 0                        | NR            |
| 455    | 478                      | NR            | 585    | 918                      | NR            | 715    | 90                       | NR            | 845    | 2                        | NR            | 975    | 0                        | NR            |
| 460    | 332                      | NR            | 590    | 958                      | NR            | 720    | 76                       | NR            | 850    | 1                        | NR            | 980    | 0                        | NR            |
| 465    | 295                      | NR            | 595    | 983                      | NR            | 725    | 65                       | NR            | 855    | 1                        | NR            | 985    | 0                        | NR            |
| 470    | 231                      | NR            | 600    | 997                      | NR            | 730    | 55                       | NR            | 860    | 1                        | NR            | 990    | 0                        | NR            |
| 475    | 183                      | NR            | 605    | 998                      | NR            | 735    | 47                       | NR            | 865    | 1                        | NR            | 995    | 0                        | NR            |
| 480    | 184                      | NR            | 610    | 982                      | NR            | 740    | 40                       | NR            | 870    | 1                        | NR            | 1000   | 0                        | NR            |
| 485    | 201                      | NR            | 615    | 958                      | NR            | 745    | 34                       | NR            | 875    | 1                        | NR            |        |                          |               |

**Summary**

$R_f = 84.8$   
 $R_g = 95.8$   
 $CIE R_a = 82.5$   
 $R_9 = 5.8$



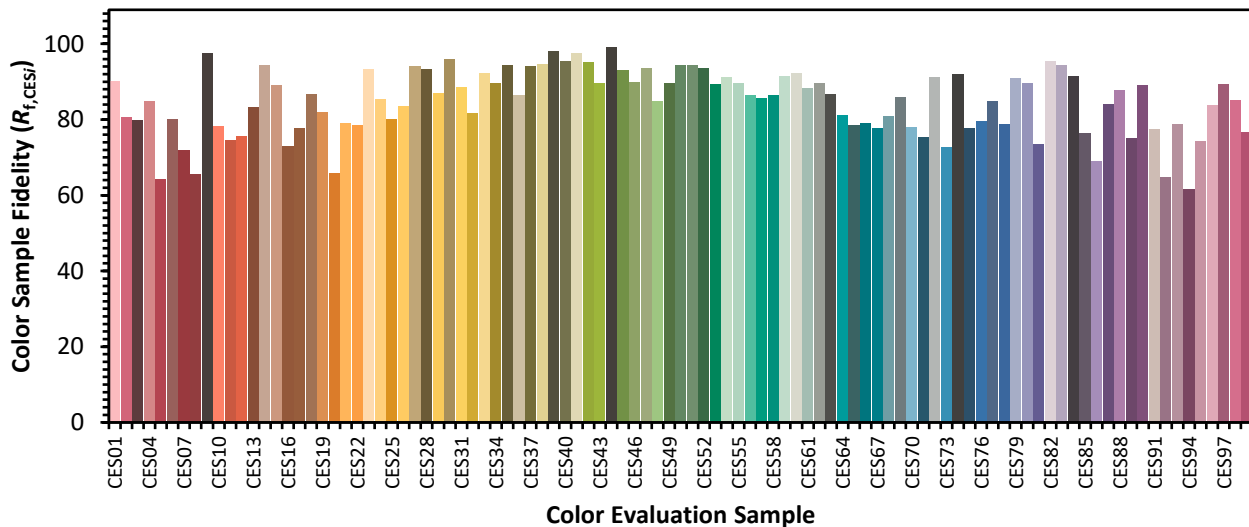
**Color Vector Graphics**



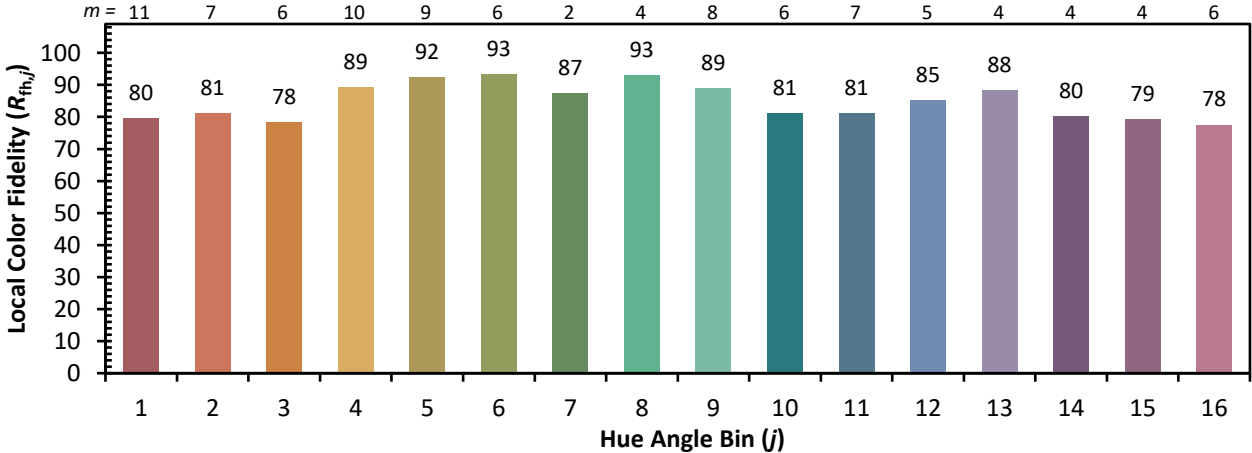
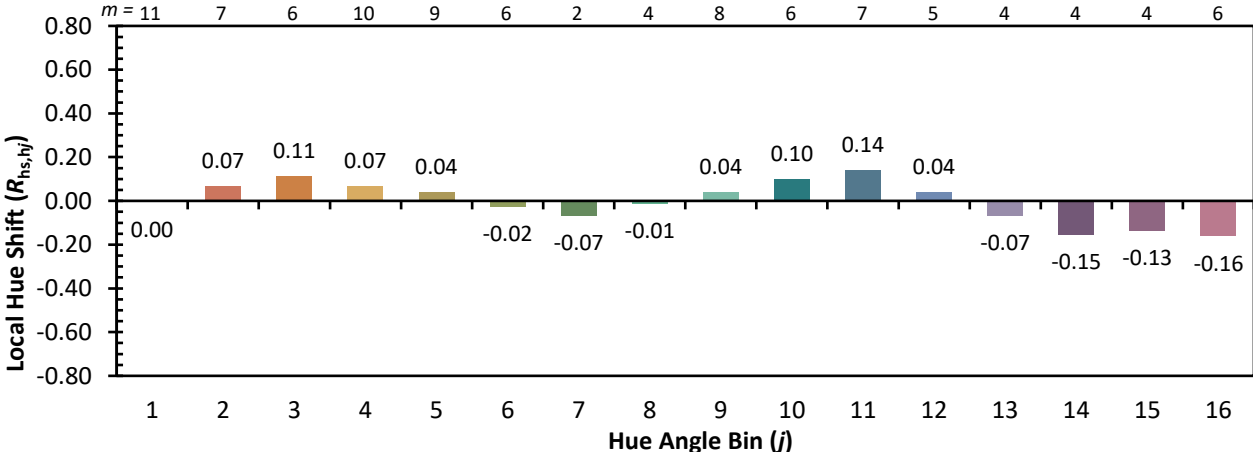
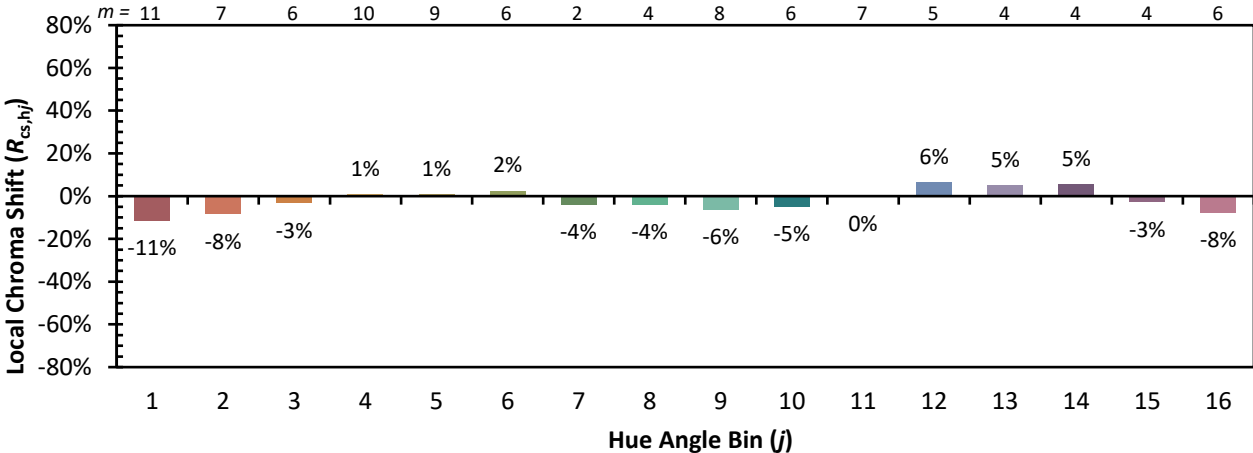


Individual Sample Fidelity Index ( $R_{f,i}$ )

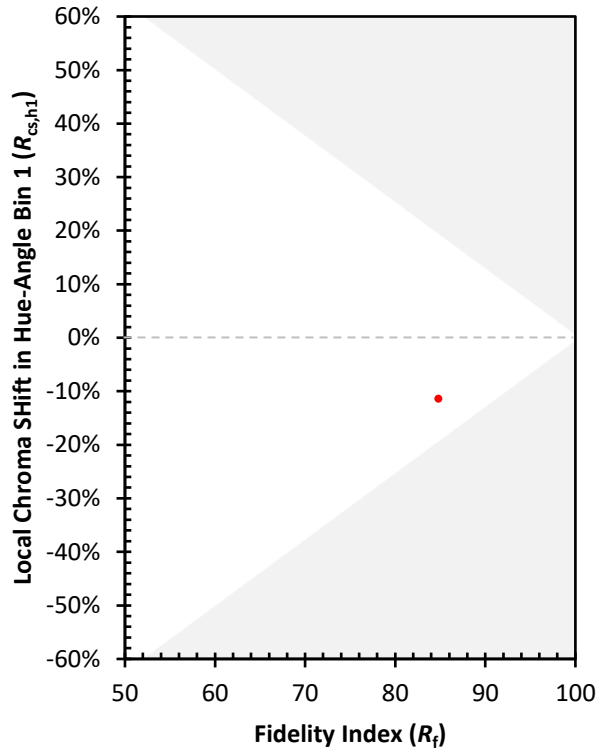
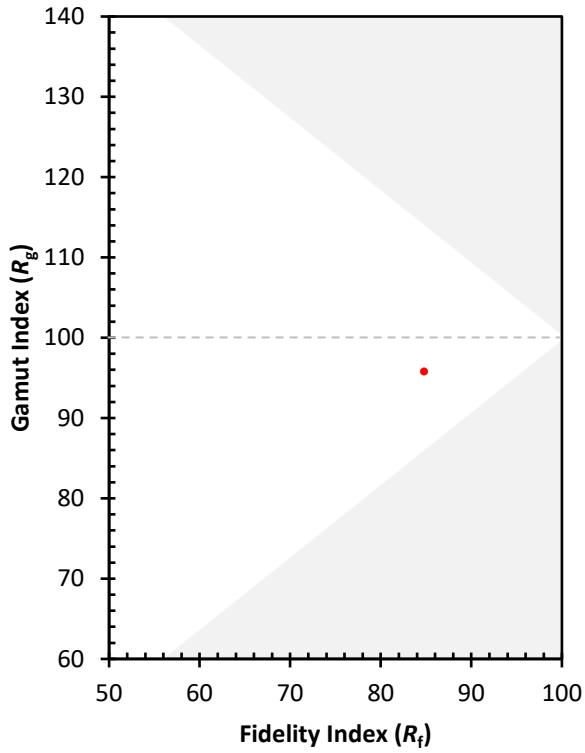
|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 86 | CES26 = 84 | CES51 = 94 | CES76 = 80 |
| CES02 = 63 | CES27 = 94 | CES52 = 94 | CES77 = 85 |
| CES03 = 31 | CES28 = 93 | CES53 = 89 | CES78 = 79 |
| CES04 = 70 | CES29 = 87 | CES54 = 91 | CES79 = 91 |
| CES05 = 50 | CES30 = 96 | CES55 = 90 | CES80 = 90 |
| CES06 = 51 | CES31 = 89 | CES56 = 87 | CES81 = 74 |
| CES07 = 42 | CES32 = 82 | CES57 = 86 | CES82 = 95 |
| CES08 = 41 | CES33 = 92 | CES58 = 87 | CES83 = 94 |
| CES09 = 29 | CES34 = 90 | CES59 = 91 | CES84 = 92 |
| CES10 = 76 | CES35 = 94 | CES60 = 92 | CES85 = 77 |
| CES11 = 59 | CES36 = 86 | CES61 = 88 | CES86 = 69 |
| CES12 = 65 | CES37 = 94 | CES62 = 90 | CES87 = 84 |
| CES13 = 43 | CES38 = 95 | CES63 = 87 | CES88 = 88 |
| CES14 = 74 | CES39 = 98 | CES64 = 81 | CES89 = 75 |
| CES15 = 72 | CES40 = 95 | CES65 = 79 | CES90 = 89 |
| CES16 = 47 | CES41 = 97 | CES66 = 79 | CES91 = 77 |
| CES17 = 50 | CES42 = 95 | CES67 = 78 | CES92 = 65 |
| CES18 = 56 | CES43 = 90 | CES68 = 81 | CES93 = 79 |
| CES19 = 72 | CES44 = 99 | CES69 = 86 | CES94 = 62 |
| CES20 = 67 | CES45 = 93 | CES70 = 78 | CES95 = 74 |
| CES21 = 87 | CES46 = 90 | CES71 = 75 | CES96 = 84 |
| CES22 = 79 | CES47 = 94 | CES72 = 91 | CES97 = 89 |
| CES23 = 92 | CES48 = 85 | CES73 = 73 | CES98 = 85 |
| CES24 = 91 | CES49 = 90 | CES74 = 92 | CES99 = 77 |
| CES25 = 72 | CES50 = 94 | CES75 = 78 |            |



Color Rendition by Hue-Angle Bin



Measure Comparisons



(END OF REPORT)