

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: P1215842

Luminaire Tested: 24-ID2-70-CFD1-L835-U

Issue Date: 12/5/2025

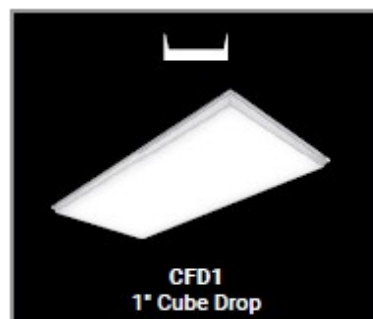
**Test Information**

Test Method: LM-79-2019  
Report Number: P1215842  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-2508-510-8)  
Test Lab: INNOVATION CENTER  
Issue Date: 12/5/2025  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: CORELITE  
Catalog Number: 24-ID2-70-CFD1-L835-U  
Description: 2X4 IN DEPTH TROFFER WITH 1INCH CUBE DROP LENS  
Light Source: 3500K CCT, 80 CRI LEDS  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

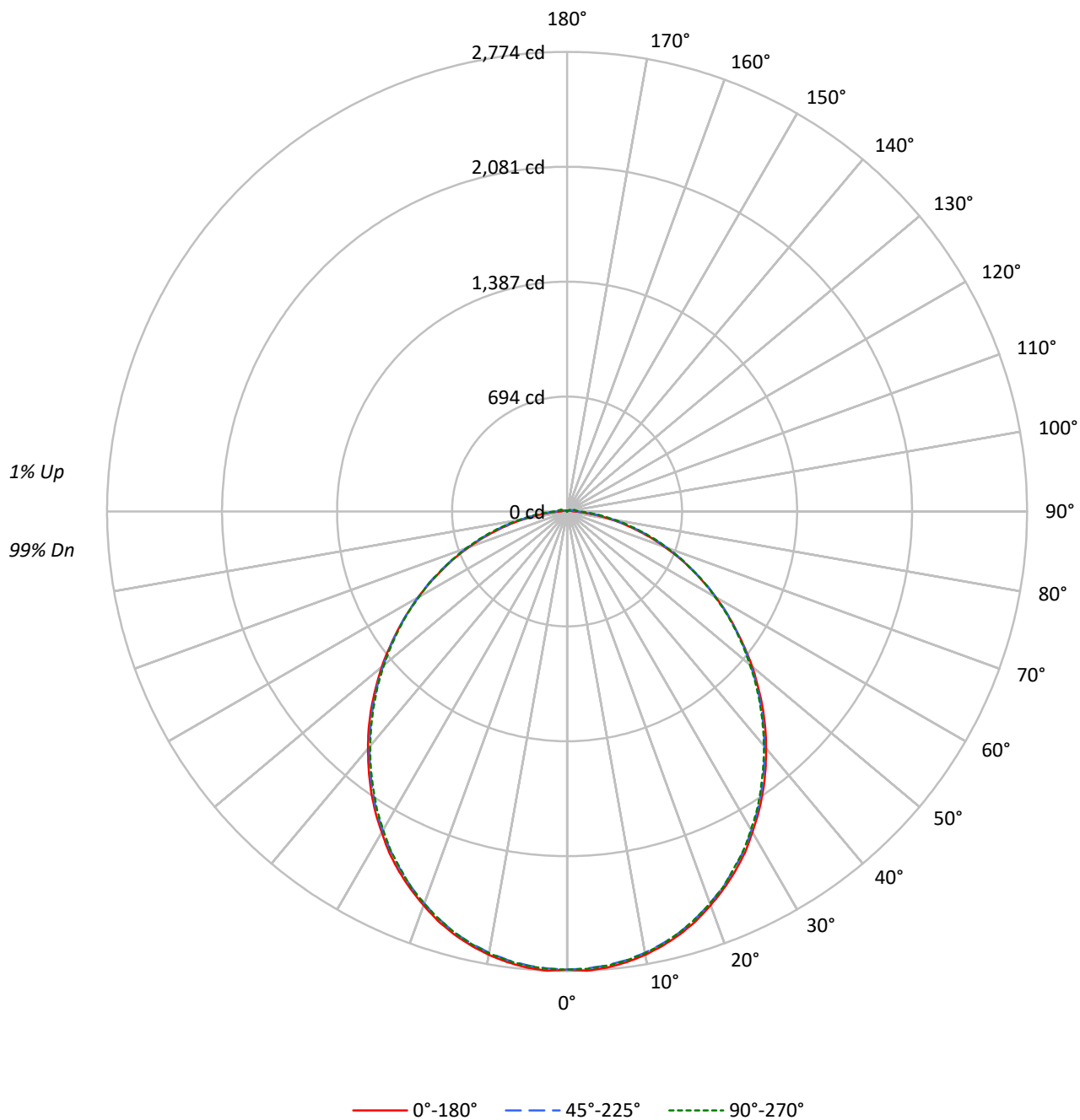
Lumens per Lamp: N/A  
Luminaire Lumens: 7350.0 lumens  
Efficiency: N/A  
Efficacy: 121.7 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.2 / 1.31  
Luminous Opening: Rectangular w/ Sides (W: 2' x L: 4' x H: 0.08')  
CIE Type: Direct

Input Watts (W): 60.4  
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: P1215842  
CATALOG NUMBER: 24-ID2-70-CFD1-L835-U

### Luminous Intensity Polar Plot



TEST NUMBER: P1215842

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**COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:**

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| RF  | 20  |     |     |     | 20  |     |     |     | 20  |     |     |     | 20  |     |     |     | 20  |
| RC  | 80  |     |     |     | 70  |     |     |     | 50  |     |     |     | 30  |     |     |     | 0   |
| RW  | 70  | 50  | 30  | 10  | 70  | 50  | 30  | 10  | 50  | 30  | 10  | 50  | 30  | 10  | 50  | 30  | 10  |
| RCR |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| 0   | 119 | 119 | 119 | 119 | 116 | 116 | 116 | 116 | 110 | 110 | 110 | 105 | 105 | 105 | 101 | 101 | 101 |
| 1   | 108 | 104 | 99  | 96  | 106 | 101 | 97  | 94  | 97  | 94  | 91  | 93  | 90  | 88  | 89  | 87  | 85  |
| 2   | 99  | 91  | 84  | 78  | 96  | 89  | 82  | 77  | 85  | 80  | 75  | 81  | 77  | 73  | 78  | 74  | 71  |
| 3   | 90  | 80  | 72  | 65  | 88  | 78  | 71  | 65  | 75  | 68  | 63  | 72  | 66  | 62  | 69  | 65  | 61  |
| 4   | 83  | 71  | 62  | 55  | 80  | 69  | 61  | 55  | 67  | 60  | 54  | 64  | 58  | 53  | 62  | 57  | 52  |
| 5   | 76  | 63  | 54  | 48  | 74  | 62  | 54  | 48  | 60  | 53  | 47  | 58  | 51  | 46  | 56  | 50  | 46  |
| 6   | 70  | 57  | 48  | 42  | 68  | 56  | 48  | 42  | 54  | 47  | 41  | 52  | 46  | 41  | 51  | 45  | 40  |
| 7   | 65  | 52  | 43  | 37  | 64  | 51  | 43  | 37  | 49  | 42  | 37  | 48  | 41  | 36  | 46  | 40  | 36  |
| 8   | 61  | 47  | 39  | 33  | 59  | 47  | 39  | 33  | 45  | 38  | 33  | 44  | 37  | 33  | 43  | 37  | 32  |
| 9   | 57  | 44  | 35  | 30  | 55  | 43  | 35  | 30  | 42  | 35  | 30  | 41  | 34  | 29  | 39  | 34  | 29  |
| 10  | 53  | 40  | 32  | 27  | 52  | 40  | 32  | 27  | 39  | 32  | 27  | 38  | 31  | 27  | 37  | 31  | 27  |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 3721 | 3721 | 3721 |
| 5°  | 3726 | 3701 | 3704 |
| 10° | 3699 | 3667 | 3673 |
| 15° | 3658 | 3621 | 3624 |
| 20° | 3597 | 3551 | 3554 |
| 25° | 3526 | 3468 | 3466 |
| 30° | 3433 | 3373 | 3368 |
| 35° | 3337 | 3265 | 3256 |
| 40° | 3225 | 3143 | 3139 |
| 45° | 3110 | 3019 | 3010 |
| 50° | 2981 | 2881 | 2875 |
| 55° | 2837 | 2743 | 2743 |
| 60° | 2697 | 2595 | 2592 |
| 65° | 2528 | 2440 | 2446 |
| 70° | 2342 | 2269 | 2279 |
| 75° | 2109 | 2029 | 2076 |
| 80° | 1816 | 1768 | 1838 |
| 85° | 1483 | 1518 | 1684 |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 3110 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 261.3  | 3.6       |
| 10°-20°   | 741.0  | 10.1      |
| 20°-30°   | 1098.0 | 14.9      |
| 30°-40°   | 1280.2 | 17.4      |
| 40°-50°   | 1276.2 | 17.4      |
| 50°-60°   | 1110.9 | 15.1      |
| 60°-70°   | 828.0  | 11.3      |
| 70°-80°   | 480.4  | 6.5       |
| 80°-90°   | 167.6  | 2.3       |
| 90°-100°  | 50.3   | 0.7       |
| 100°-110° | 30.1   | 0.4       |
| 110°-120° | 15.9   | 0.2       |
| 120°-130° | 6.8    | 0.1       |
| 130°-140° | 2.0    | 0.0       |
| 140°-150° | 0.6    | 0.0       |
| 150°-160° | 0.5    | 0.0       |
| 160°-170° | 0.0    | 0.0       |
| 170°-180° | 0.0    | 0.0       |
| 0°-30°    | 2100.3 | 28.6      |
| 0°-40°    | 3380.5 | 46.0      |
| 0°-60°    | 5767.6 | 78.5      |
| 0°-90°    | 7243.6 | 98.6      |
| 90°-120°  | 96.3   | 1.3       |
| 90°-150°  | 105.8  | 1.4       |
| 90°-180°  | 106.0  | 1.4       |
| 0°-180°   | 7350.0 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 2765 | 2765  | 2765 | 2765  | 2765 |      |
| 5°   | 2763 | 2754  | 2750 | 2747  | 2752 | 262  |
| 15°  | 2640 | 2631  | 2629 | 2623  | 2629 | 744  |
| 25°  | 2397 | 2390  | 2382 | 2379  | 2378 | 1103 |
| 35°  | 2060 | 2054  | 2047 | 2040  | 2038 | 1288 |
| 45°  | 1667 | 1660  | 1654 | 1648  | 1645 | 1285 |
| 55°  | 1244 | 1247  | 1240 | 1241  | 1236 | 1114 |
| 65°  | 828  | 833   | 836  | 838   | 834  | 822  |
| 75°  | 436  | 445   | 452  | 463   | 459  | 464  |
| 85°  | 118  | 132   | 146  | 155   | 159  | 127  |
| 90°  | 40   | 51    | 65   | 75    | 77   | 25   |
| 95°  | 30   | 36    | 47   | 53    | 55   | 23   |
| 105° | 20   | 20    | 29   | 35    | 38   | 21   |
| 115° | 12   | 10    | 15   | 20    | 24   | 12   |
| 125° | 7    | 5     | 5    | 10    | 13   | 6    |
| 135° | 3    | 2     | 1    | 3     | 4    | 2    |
| 145° | 1    | 1     | 1    | 1     | 1    | 1    |
| 155° | 1    | 1     | 1    | 1     | 1    | 1    |
| 165° | 0    | 0     | 0    | 0     | 0    | 0    |
| 175° | 0    | 0     | 0    | 0     | 0    | 0    |
| 180° | 0    | 0     | 0    | 0     | 0    | 0    |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 2765.2 | 2765.2 | 2765.2 | 2765.2 | 2765.2 |
| 2.5°   | 2774.2 | 2766.2 | 2760.2 | 2758.2 | 2763.2 |
| 5°     | 2763.2 | 2754.2 | 2750.2 | 2747.2 | 2752.2 |
| 7.5°   | 2744.2 | 2737.2 | 2731.2 | 2728.2 | 2734.2 |
| 10°    | 2717.2 | 2708.2 | 2704.2 | 2701.2 | 2707.2 |
| 12.5°  | 2682.2 | 2674.2 | 2670.2 | 2667.2 | 2673.2 |
| 15°    | 2640.2 | 2631.2 | 2629.2 | 2623.2 | 2629.2 |
| 17.5°  | 2590.2 | 2582.2 | 2576.2 | 2574.2 | 2577.2 |
| 20°    | 2530.2 | 2525.2 | 2518.2 | 2516.2 | 2518.2 |
| 22.5°  | 2466.2 | 2460.2 | 2454.2 | 2450.2 | 2456.2 |
| 25°    | 2397.2 | 2390.2 | 2382.2 | 2379.2 | 2378.2 |
| 27.5°  | 2322.2 | 2313.2 | 2307.2 | 2301.2 | 2305.2 |
| 30°    | 2235.1 | 2231.1 | 2224.1 | 2220.1 | 2218.1 |
| 32.5°  | 2151.1 | 2148.1 | 2139.1 | 2131.1 | 2133.1 |
| 35°    | 2060.1 | 2054.1 | 2047.1 | 2040.1 | 2038.1 |
| 37.5°  | 1965.1 | 1959.1 | 1951.1 | 1945.1 | 1944.1 |
| 40°    | 1867.1 | 1863.1 | 1853.1 | 1847.1 | 1847.1 |
| 42.5°  | 1769.1 | 1764.1 | 1753.1 | 1750.1 | 1747.1 |
| 45°    | 1667.1 | 1660.1 | 1654.1 | 1648.1 | 1645.1 |
| 47.5°  | 1561.1 | 1557.1 | 1550.1 | 1546.1 | 1544.1 |
| 50°    | 1458.1 | 1453.1 | 1446.1 | 1443.1 | 1439.1 |
| 52.5°  | 1350.1 | 1350.1 | 1345.1 | 1342.1 | 1338.1 |
| 55°    | 1244.1 | 1247.1 | 1240.1 | 1241.1 | 1236.1 |
| 57.5°  | 1139.1 | 1142.1 | 1143.1 | 1136.1 | 1135.1 |
| 60°    | 1037.1 | 1038.1 | 1035.1 | 1035.1 | 1030.1 |
| 62.5°  | 932.1  | 935.1  | 940.1  | 937.1  | 936.1  |
| 65°    | 828.1  | 833.1  | 836.1  | 838.1  | 834.1  |
| 67.5°  | 731.0  | 736.0  | 741.0  | 739.0  | 738.0  |
| 70°    | 628.0  | 634.0  | 644.0  | 648.0  | 643.0  |
| 72.5°  | 532.0  | 540.0  | 545.0  | 551.0  | 553.0  |
| 75°    | 436.0  | 445.0  | 452.0  | 463.0  | 459.0  |
| 77.5°  | 346.0  | 357.0  | 366.0  | 375.0  | 375.0  |
| 80°    | 261.0  | 272.0  | 283.0  | 293.0  | 291.0  |
| 82.5°  | 184.0  | 197.0  | 208.0  | 219.0  | 221.0  |
| 85°    | 118.0  | 132.0  | 146.0  | 155.0  | 159.0  |
| 87.5°  | 71.0   | 82.0   | 97.0   | 107.0  | 111.0  |
| 90°    | 40.0   | 51.0   | 65.0   | 75.0   | 77.0   |
| 92.5°  | 33.0   | 40.0   | 52.0   | 61.0   | 62.0   |
| 95°    | 30.0   | 36.0   | 47.0   | 53.0   | 55.0   |
| 97.5°  | 27.0   | 31.0   | 42.0   | 49.0   | 51.0   |
| 100°   | 25.0   | 27.0   | 37.0   | 44.0   | 46.0   |
| 102.5° | 22.0   | 24.0   | 33.0   | 39.0   | 42.0   |
| 105°   | 20.0   | 20.0   | 29.0   | 35.0   | 38.0   |
| 107.5° | 18.0   | 17.0   | 25.0   | 31.0   | 34.0   |
| 110°   | 16.0   | 14.0   | 22.0   | 27.0   | 31.0   |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°   | 22.5° | 45°  | 67.5° | 90°  |
|--------|------|-------|------|-------|------|
| 112.5° | 14.0 | 12.0  | 18.0 | 23.0  | 27.0 |
| 115°   | 12.0 | 10.0  | 15.0 | 20.0  | 24.0 |
| 117.5° | 10.0 | 9.0   | 12.0 | 17.0  | 21.0 |
| 120°   | 9.0  | 7.0   | 10.0 | 15.0  | 18.0 |
| 122.5° | 8.0  | 6.0   | 7.0  | 12.0  | 15.0 |
| 125°   | 7.0  | 5.0   | 5.0  | 10.0  | 13.0 |
| 127.5° | 5.0  | 4.0   | 3.0  | 8.0   | 10.0 |
| 130°   | 5.0  | 3.0   | 2.0  | 6.0   | 8.0  |
| 132.5° | 4.0  | 3.0   | 1.0  | 4.0   | 6.0  |
| 135°   | 3.0  | 2.0   | 1.0  | 3.0   | 4.0  |
| 137.5° | 2.0  | 2.0   | 1.0  | 2.0   | 3.0  |
| 140°   | 2.0  | 1.0   | 1.0  | 1.0   | 2.0  |
| 142.5° | 1.0  | 1.0   | 1.0  | 1.0   | 1.0  |
| 145°   | 1.0  | 1.0   | 1.0  | 1.0   | 1.0  |
| 147.5° | 1.0  | 1.0   | 1.0  | 1.0   | 1.0  |
| 150°   | 1.0  | 1.0   | 1.0  | 1.0   | 1.0  |
| 152.5° | 1.0  | 1.0   | 1.0  | 1.0   | 1.0  |
| 155°   | 1.0  | 1.0   | 1.0  | 1.0   | 1.0  |
| 157.5° | 1.0  | 1.0   | 1.0  | 1.0   | 1.0  |
| 160°   | 2.0  | 1.0   | 1.0  | 1.0   | 1.0  |
| 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: P1215842

CATALOG NUMBER: 24-ID2-70-CFD1-L835-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 | 15.34            | 16.92 | 15.73 | 17.27 | 17.62 | 15.37          | 16.96 | 15.76 | 17.30 | 17.65 |
|                 | 3H   | 17.02            | 18.45 | 17.42 | 18.81 | 19.21 | 17.13          | 18.56 | 17.53 | 18.92 | 19.31 |
|                 | 4H   | 17.62            | 18.97 | 18.05 | 19.35 | 19.76 | 17.80          | 19.15 | 18.22 | 19.53 | 19.94 |
|                 | 6H   | 18.05            | 19.30 | 18.48 | 19.69 | 20.12 | 18.32          | 19.57 | 18.75 | 19.96 | 20.39 |
|                 | 8H   | 18.18            | 19.37 | 18.62 | 19.79 | 20.22 | 18.50          | 19.70 | 18.95 | 20.12 | 20.55 |
|                 | 12H  | 18.26            | 19.40 | 18.71 | 19.81 | 20.28 | 18.66          | 19.80 | 19.11 | 20.21 | 20.68 |
| 4H              | 2H   | 15.94            | 17.29 | 16.36 | 17.66 | 18.08 | 15.96          | 17.31 | 16.38 | 17.69 | 18.10 |
|                 | 3H   | 17.84            | 18.97 | 18.27 | 19.39 | 19.83 | 17.94          | 19.07 | 18.37 | 19.50 | 19.93 |
|                 | 4H   | 18.57            | 19.59 | 19.02 | 20.03 | 20.50 | 18.74          | 19.77 | 19.20 | 20.21 | 20.68 |
|                 | 6H   | 19.11            | 20.01 | 19.59 | 20.48 | 20.97 | 19.39          | 20.29 | 19.87 | 20.76 | 21.24 |
|                 | 8H   | 19.28            | 20.12 | 19.77 | 20.59 | 21.09 | 19.63          | 20.47 | 20.11 | 20.94 | 21.44 |
|                 | 12H  | 19.41            | 20.16 | 19.91 | 20.66 | 21.17 | 19.84          | 20.59 | 20.34 | 21.09 | 21.60 |
| 8H              | 4H   | 18.87            | 19.71 | 19.35 | 20.18 | 20.67 | 19.02          | 19.86 | 19.51 | 20.33 | 20.83 |
|                 | 6H   | 19.53            | 20.23 | 20.05 | 20.75 | 21.25 | 19.80          | 20.50 | 20.31 | 21.01 | 21.52 |
|                 | 8H   | 19.77            | 20.40 | 20.31 | 20.93 | 21.45 | 20.12          | 20.74 | 20.65 | 21.28 | 21.80 |
|                 | 12H  | 19.97            | 20.52 | 20.50 | 21.04 | 21.63 | 20.42          | 20.97 | 20.95 | 21.49 | 22.08 |
| 12H             | 4H   | 18.90            | 19.66 | 19.40 | 20.16 | 20.66 | 19.05          | 19.80 | 19.55 | 20.31 | 20.81 |
|                 | 6H   | 19.59            | 20.22 | 20.12 | 20.75 | 21.27 | 19.84          | 20.47 | 20.38 | 21.00 | 21.52 |
|                 | 8H   | 19.89            | 20.45 | 20.42 | 20.96 | 21.56 | 20.22          | 20.78 | 20.75 | 21.30 | 21.89 |

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

Report Prepared for

Cooper Lighting Solutions

Corelite

Report Number: SP1-2506-458-1

Test Date: 07/23/2025

Luminaire Tested: 22ID2-55-CFR1-L835-U

Data in this report applies to families of products including 22ID2-55-CFR1-L835-U

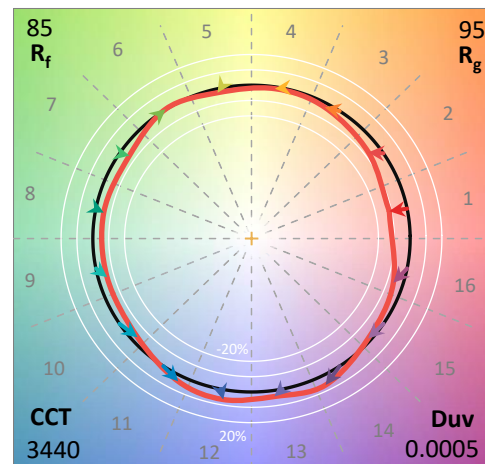
### Test Information

Test Method: LM-79-2019  
 Report Number: SP1-2506-458-1  
 Test Lab: COOPER LIGHTING SOLUTIONS  
 Photometer: SP1 - 76IN SPHERE  
 Measurement Geometry:  $4\pi$   
 Issue Date: 08/27/2025  
 Manufacturer: COOPER LIGHTING SOLUTIONS  
 Product Line: Corelite  
 Catalog Number: **22ID2-55-CFR1-L835-U**  
 Description: 2X2 CGTX WITH INDEPTH FRAME AND CFR1 LENS - 5500 LUMEN 3500K 80CRI

### Spectral Parameters

CCT (K): 3440  
 CIE  $u'$ : 0.2370  
 CIE  $v'$ : 0.5132  
 Duv: 0.0005  
 CIE x: 0.4093  
 CIE y: 0.3940  
 CIE z: 0.1967  
 Peak Wavelength (nm): 599  
 Dominant Wavelength (nm): 580  
 Purity: 41.09375  
 R<sub>f</sub>: 84.9  
 R<sub>g</sub>: 94.6

CRI (Ra): 84.2  
 R1: 82.8  
 R2: 91.7  
 R3: 96.7  
 R4: 81.9  
 R5: 82.6  
 R6: 88.8  
 R7: 85.0  
 R8: 63.7  
 R9: 13.6  
 R10: 80.1  
 R11: 81.1  
 R12: 65.8  
 R13: 85.2  
 R14: 98.7  
 R15: 76.2



### Test Conditions

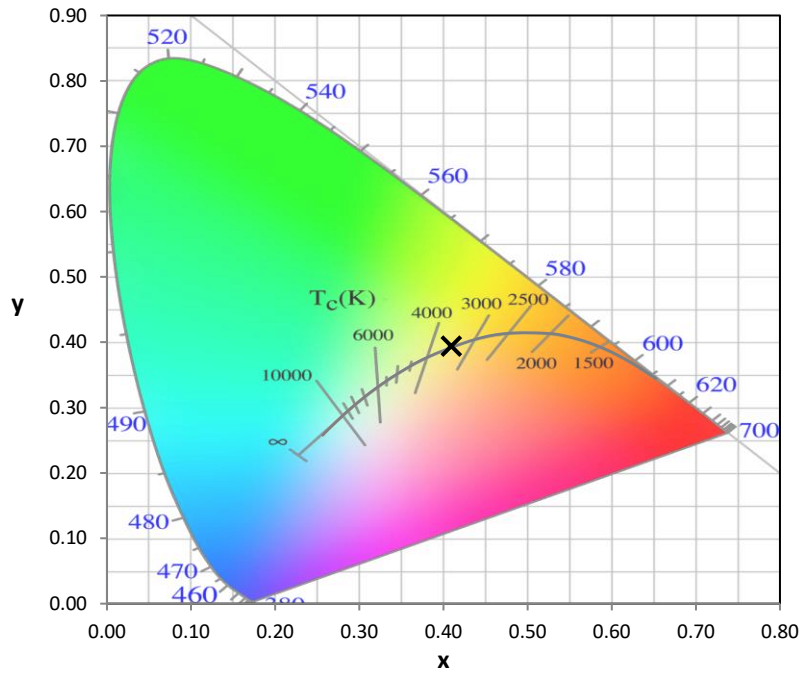
Stabilization Time: 36M  
 Operation Time: 1H 36M  
 Sphere Temperature (°C): 24.0

REPORT NUMBER: SP1-2506-458-1

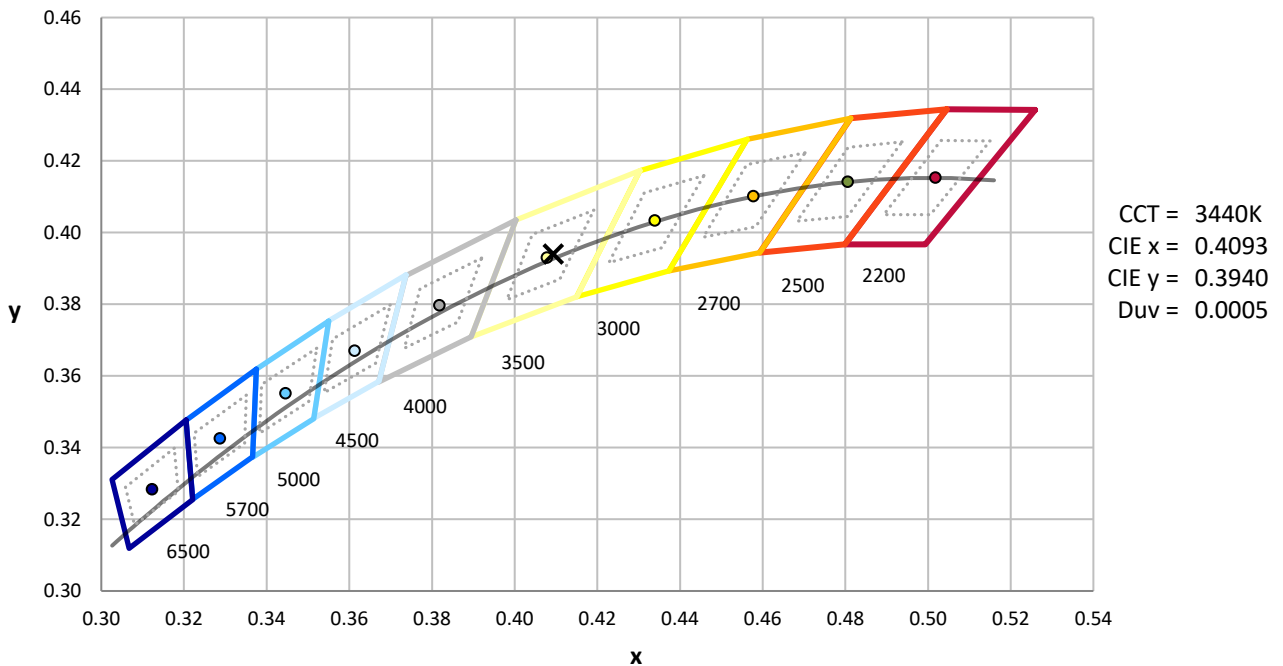
| Measurement and Test Equipment |                       |                  |                      |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument                     | Identification Number | Calibration Date | Calibration Due Date |
| 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           |

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**CIE 1931 Chromaticity Diagram**



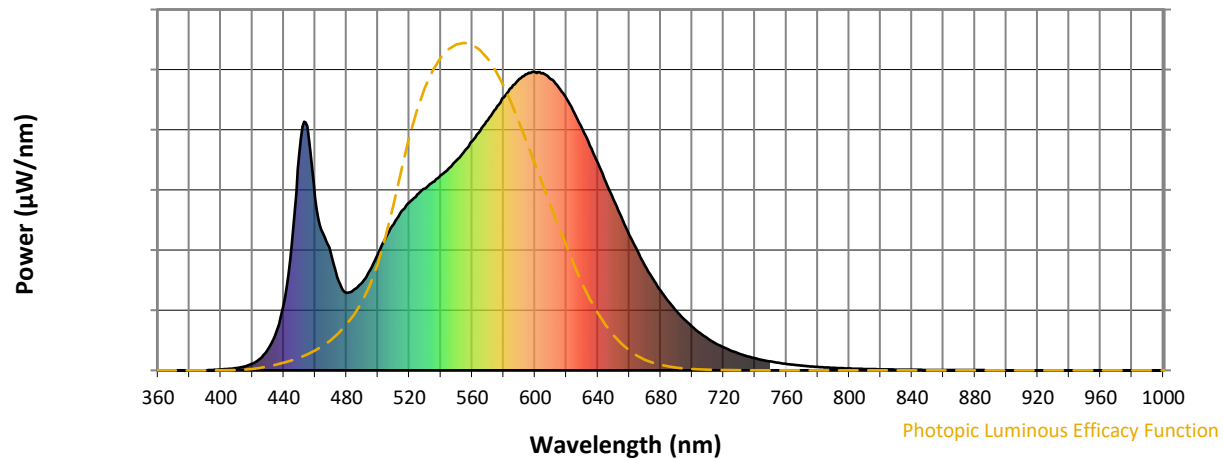
**CIE 1931 Chromaticity Diagram with 2017 ANSI 7-Step and 4-Step Quadrangles**



Point lies inside the ANSI 3500K 4-step quadrangle

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### Photopic Flux vs. Wavelength

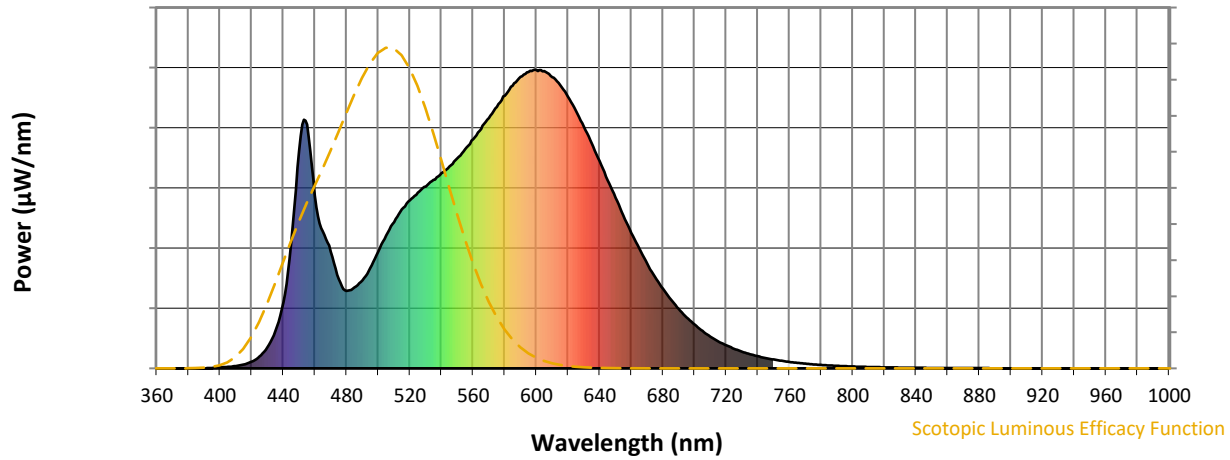


### Photopic Lumens: NR

| $\lambda$<br>(nm) | Power<br>$\text{W}^{\wedge}/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^{\wedge}/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^{\wedge}/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^{\wedge}/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^{\wedge}/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) |
|-------------------|----------------------------------------|--------------------------------|-------------------|----------------------------------------|--------------------------------|-------------------|----------------------------------------|--------------------------------|-------------------|----------------------------------------|--------------------------------|-------------------|----------------------------------------|--------------------------------|
| 360               | 0                                      | NR                             | 490               | 295                                    | NR                             | 620               | 910                                    | NR                             | 750               | 30                                     | NR                             | 880               | 1                                      | NR                             |
| 365               | 0                                      | NR                             | 495               | 335                                    | NR                             | 625               | 862                                    | NR                             | 755               | 25                                     | NR                             | 885               | 1                                      | NR                             |
| 370               | 0                                      | NR                             | 500               | 390                                    | NR                             | 630               | 809                                    | NR                             | 760               | 21                                     | NR                             | 890               | 1                                      | NR                             |
| 375               | 0                                      | NR                             | 505               | 445                                    | NR                             | 635               | 752                                    | NR                             | 765               | 18                                     | NR                             | 895               | 0                                      | NR                             |
| 380               | 0                                      | NR                             | 510               | 490                                    | NR                             | 640               | 694                                    | NR                             | 770               | 16                                     | NR                             | 900               | 0                                      | NR                             |
| 385               | 0                                      | NR                             | 515               | 532                                    | NR                             | 645               | 630                                    | NR                             | 775               | 13                                     | NR                             | 905               | 0                                      | NR                             |
| 390               | 0                                      | NR                             | 520               | 563                                    | NR                             | 650               | 571                                    | NR                             | 780               | 12                                     | NR                             | 910               | 0                                      | NR                             |
| 395               | 2                                      | NR                             | 525               | 588                                    | NR                             | 655               | 512                                    | NR                             | 785               | 10                                     | NR                             | 915               | 0                                      | NR                             |
| 400               | 3                                      | NR                             | 530               | 609                                    | NR                             | 660               | 453                                    | NR                             | 790               | 8                                      | NR                             | 920               | 0                                      | NR                             |
| 405               | 5                                      | NR                             | 535               | 631                                    | NR                             | 665               | 401                                    | NR                             | 795               | 7                                      | NR                             | 925               | 0                                      | NR                             |
| 410               | 8                                      | NR                             | 540               | 654                                    | NR                             | 670               | 351                                    | NR                             | 800               | 6                                      | NR                             | 930               | 0                                      | NR                             |
| 415               | 13                                     | NR                             | 545               | 677                                    | NR                             | 675               | 306                                    | NR                             | 805               | 5                                      | NR                             | 935               | 0                                      | NR                             |
| 420               | 23                                     | NR                             | 550               | 702                                    | NR                             | 680               | 267                                    | NR                             | 810               | 5                                      | NR                             | 940               | 0                                      | NR                             |
| 425               | 40                                     | NR                             | 555               | 734                                    | NR                             | 685               | 230                                    | NR                             | 815               | 4                                      | NR                             | 945               | 0                                      | NR                             |
| 430               | 70                                     | NR                             | 560               | 767                                    | NR                             | 690               | 199                                    | NR                             | 820               | 4                                      | NR                             | 950               | 0                                      | NR                             |
| 435               | 126                                    | NR                             | 565               | 802                                    | NR                             | 695               | 171                                    | NR                             | 825               | 3                                      | NR                             | 955               | 0                                      | NR                             |
| 440               | 221                                    | NR                             | 570               | 838                                    | NR                             | 700               | 146                                    | NR                             | 830               | 3                                      | NR                             | 960               | 0                                      | NR                             |
| 445               | 418                                    | NR                             | 575               | 875                                    | NR                             | 705               | 125                                    | NR                             | 835               | 2                                      | NR                             | 965               | 0                                      | NR                             |
| 450               | 729                                    | NR                             | 580               | 913                                    | NR                             | 710               | 107                                    | NR                             | 840               | 2                                      | NR                             | 970               | 0                                      | NR                             |
| 455               | 816                                    | NR                             | 585               | 946                                    | NR                             | 715               | 90                                     | NR                             | 845               | 2                                      | NR                             | 975               | 0                                      | NR                             |
| 460               | 578                                    | NR                             | 590               | 976                                    | NR                             | 720               | 77                                     | NR                             | 850               | 1                                      | NR                             | 980               | 0                                      | NR                             |
| 465               | 458                                    | NR                             | 595               | 992                                    | NR                             | 725               | 66                                     | NR                             | 855               | 1                                      | NR                             | 985               | 0                                      | NR                             |
| 470               | 390                                    | NR                             | 600               | 999                                    | NR                             | 730               | 56                                     | NR                             | 860               | 1                                      | NR                             | 990               | 0                                      | NR                             |
| 475               | 299                                    | NR                             | 605               | 995                                    | NR                             | 735               | 47                                     | NR                             | 865               | 1                                      | NR                             | 995               | 0                                      | NR                             |
| 480               | 260                                    | NR                             | 610               | 975                                    | NR                             | 740               | 40                                     | NR                             | 870               | 1                                      | NR                             | 1000              | 0                                      | NR                             |
| 485               | 271                                    | NR                             | 615               | 948                                    | NR                             | 745               | 34                                     | NR                             | 875               | 1                                      | NR                             |                   |                                        |                                |

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### Scotopic Flux vs. Wavelength



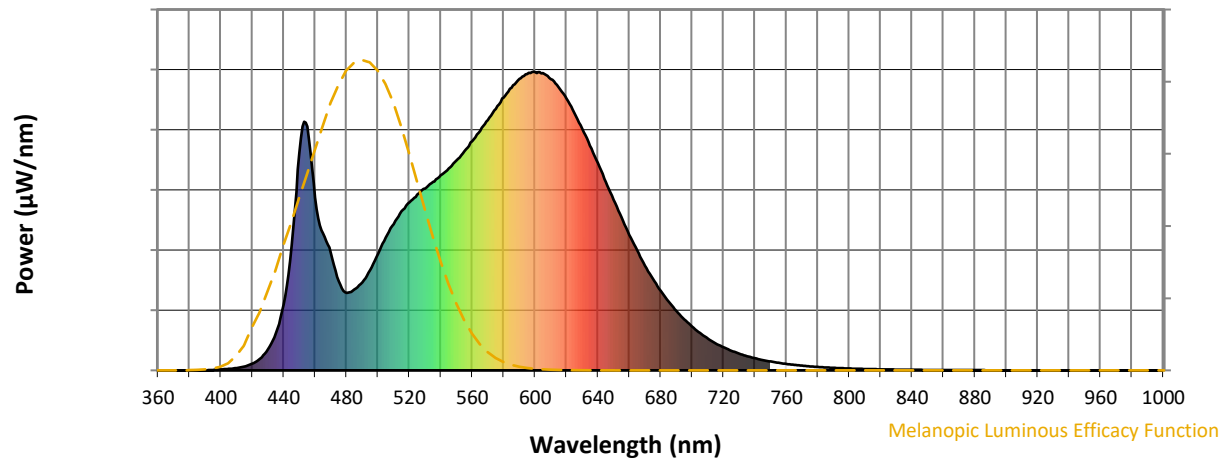
Scotopic Lumens: NR

S/P: 1.53

| 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    | 295                      | NR            | 620    | 910                      | NR            | 750    | 30                       | NR            | 880    | 1                        | NR            |
| 365    | 0                        | NR            | 495    | 335                      | NR            | 625    | 862                      | NR            | 755    | 25                       | NR            | 885    | 1                        | NR            |
| 370    | 0                        | NR            | 500    | 390                      | NR            | 630    | 809                      | NR            | 760    | 21                       | NR            | 890    | 1                        | NR            |
| 375    | 0                        | NR            | 505    | 445                      | NR            | 635    | 752                      | NR            | 765    | 18                       | NR            | 895    | 0                        | NR            |
| 380    | 0                        | NR            | 510    | 490                      | NR            | 640    | 694                      | NR            | 770    | 16                       | NR            | 900    | 0                        | NR            |
| 385    | 0                        | NR            | 515    | 532                      | NR            | 645    | 630                      | NR            | 775    | 13                       | NR            | 905    | 0                        | NR            |
| 390    | 0                        | NR            | 520    | 563                      | NR            | 650    | 571                      | NR            | 780    | 12                       | NR            | 910    | 0                        | NR            |
| 395    | 2                        | NR            | 525    | 588                      | NR            | 655    | 512                      | NR            | 785    | 10                       | NR            | 915    | 0                        | NR            |
| 400    | 3                        | NR            | 530    | 609                      | NR            | 660    | 453                      | NR            | 790    | 8                        | NR            | 920    | 0                        | NR            |
| 405    | 5                        | NR            | 535    | 631                      | NR            | 665    | 401                      | NR            | 795    | 7                        | NR            | 925    | 0                        | NR            |
| 410    | 8                        | NR            | 540    | 654                      | NR            | 670    | 351                      | NR            | 800    | 6                        | NR            | 930    | 0                        | NR            |
| 415    | 13                       | NR            | 545    | 677                      | NR            | 675    | 306                      | NR            | 805    | 5                        | NR            | 935    | 0                        | NR            |
| 420    | 23                       | NR            | 550    | 702                      | NR            | 680    | 267                      | NR            | 810    | 5                        | NR            | 940    | 0                        | NR            |
| 425    | 40                       | NR            | 555    | 734                      | NR            | 685    | 230                      | NR            | 815    | 4                        | NR            | 945    | 0                        | NR            |
| 430    | 70                       | NR            | 560    | 767                      | NR            | 690    | 199                      | NR            | 820    | 4                        | NR            | 950    | 0                        | NR            |
| 435    | 126                      | NR            | 565    | 802                      | NR            | 695    | 171                      | NR            | 825    | 3                        | NR            | 955    | 0                        | NR            |
| 440    | 221                      | NR            | 570    | 838                      | NR            | 700    | 146                      | NR            | 830    | 3                        | NR            | 960    | 0                        | NR            |
| 445    | 418                      | NR            | 575    | 875                      | NR            | 705    | 125                      | NR            | 835    | 2                        | NR            | 965    | 0                        | NR            |
| 450    | 729                      | NR            | 580    | 913                      | NR            | 710    | 107                      | NR            | 840    | 2                        | NR            | 970    | 0                        | NR            |
| 455    | 816                      | NR            | 585    | 946                      | NR            | 715    | 90                       | NR            | 845    | 2                        | NR            | 975    | 0                        | NR            |
| 460    | 578                      | NR            | 590    | 976                      | NR            | 720    | 77                       | NR            | 850    | 1                        | NR            | 980    | 0                        | NR            |
| 465    | 458                      | NR            | 595    | 992                      | NR            | 725    | 66                       | NR            | 855    | 1                        | NR            | 985    | 0                        | NR            |
| 470    | 390                      | NR            | 600    | 999                      | NR            | 730    | 56                       | NR            | 860    | 1                        | NR            | 990    | 0                        | NR            |
| 475    | 299                      | NR            | 605    | 995                      | NR            | 735    | 47                       | NR            | 865    | 1                        | NR            | 995    | 0                        | NR            |
| 480    | 260                      | NR            | 610    | 975                      | NR            | 740    | 40                       | NR            | 870    | 1                        | NR            | 1000   | 0                        | NR            |
| 485    | 271                      | NR            | 615    | 948                      | NR            | 745    | 34                       | NR            | 875    | 1                        | NR            |        |                          |               |

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### Melanopic Flux vs. Wavelength



Melanopic Lumens: NR

M/P: 3.07

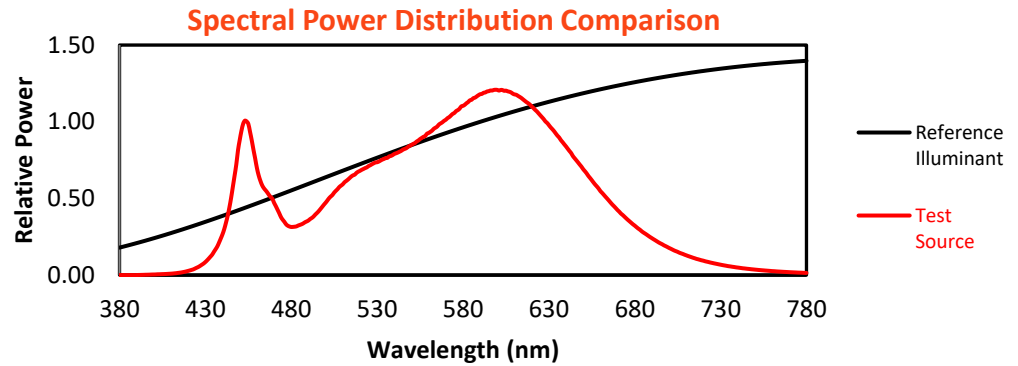
| λ<br>(nm) | Power<br>W <sup>λ</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>λ</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>λ</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>λ</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>λ</sup> /nm | Lumens<br>(φ/nm) |
|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|
| 360       | 0                           | NR               | 490       | 295                         | NR               | 620       | 910                         | NR               | 750       | 30                          | NR               | 880       | 1                           | NR               |
| 365       | 0                           | NR               | 495       | 335                         | NR               | 625       | 862                         | NR               | 755       | 25                          | NR               | 885       | 1                           | NR               |
| 370       | 0                           | NR               | 500       | 390                         | NR               | 630       | 809                         | NR               | 760       | 21                          | NR               | 890       | 1                           | NR               |
| 375       | 0                           | NR               | 505       | 445                         | NR               | 635       | 752                         | NR               | 765       | 18                          | NR               | 895       | 0                           | NR               |
| 380       | 0                           | NR               | 510       | 490                         | NR               | 640       | 694                         | NR               | 770       | 16                          | NR               | 900       | 0                           | NR               |
| 385       | 0                           | NR               | 515       | 532                         | NR               | 645       | 630                         | NR               | 775       | 13                          | NR               | 905       | 0                           | NR               |
| 390       | 0                           | NR               | 520       | 563                         | NR               | 650       | 571                         | NR               | 780       | 12                          | NR               | 910       | 0                           | NR               |
| 395       | 2                           | NR               | 525       | 588                         | NR               | 655       | 512                         | NR               | 785       | 10                          | NR               | 915       | 0                           | NR               |
| 400       | 3                           | NR               | 530       | 609                         | NR               | 660       | 453                         | NR               | 790       | 8                           | NR               | 920       | 0                           | NR               |
| 405       | 5                           | NR               | 535       | 631                         | NR               | 665       | 401                         | NR               | 795       | 7                           | NR               | 925       | 0                           | NR               |
| 410       | 8                           | NR               | 540       | 654                         | NR               | 670       | 351                         | NR               | 800       | 6                           | NR               | 930       | 0                           | NR               |
| 415       | 13                          | NR               | 545       | 677                         | NR               | 675       | 306                         | NR               | 805       | 5                           | NR               | 935       | 0                           | NR               |
| 420       | 23                          | NR               | 550       | 702                         | NR               | 680       | 267                         | NR               | 810       | 5                           | NR               | 940       | 0                           | NR               |
| 425       | 40                          | NR               | 555       | 734                         | NR               | 685       | 230                         | NR               | 815       | 4                           | NR               | 945       | 0                           | NR               |
| 430       | 70                          | NR               | 560       | 767                         | NR               | 690       | 199                         | NR               | 820       | 4                           | NR               | 950       | 0                           | NR               |
| 435       | 126                         | NR               | 565       | 802                         | NR               | 695       | 171                         | NR               | 825       | 3                           | NR               | 955       | 0                           | NR               |
| 440       | 221                         | NR               | 570       | 838                         | NR               | 700       | 146                         | NR               | 830       | 3                           | NR               | 960       | 0                           | NR               |
| 445       | 418                         | NR               | 575       | 875                         | NR               | 705       | 125                         | NR               | 835       | 2                           | NR               | 965       | 0                           | NR               |
| 450       | 729                         | NR               | 580       | 913                         | NR               | 710       | 107                         | NR               | 840       | 2                           | NR               | 970       | 0                           | NR               |
| 455       | 816                         | NR               | 585       | 946                         | NR               | 715       | 90                          | NR               | 845       | 2                           | NR               | 975       | 0                           | NR               |
| 460       | 578                         | NR               | 590       | 976                         | NR               | 720       | 77                          | NR               | 850       | 1                           | NR               | 980       | 0                           | NR               |
| 465       | 458                         | NR               | 595       | 992                         | NR               | 725       | 66                          | NR               | 855       | 1                           | NR               | 985       | 0                           | NR               |
| 470       | 390                         | NR               | 600       | 999                         | NR               | 730       | 56                          | NR               | 860       | 1                           | NR               | 990       | 0                           | NR               |
| 475       | 299                         | NR               | 605       | 995                         | NR               | 735       | 47                          | NR               | 865       | 1                           | NR               | 995       | 0                           | NR               |
| 480       | 260                         | NR               | 610       | 975                         | NR               | 740       | 40                          | NR               | 870       | 1                           | NR               | 1000      | 0                           | NR               |
| 485       | 271                         | NR               | 615       | 948                         | NR               | 745       | 34                          | NR               | 875       | 1                           | NR               |           |                             |                  |

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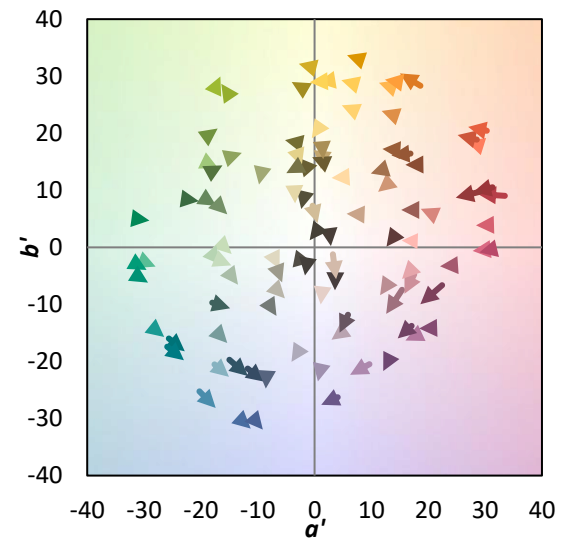
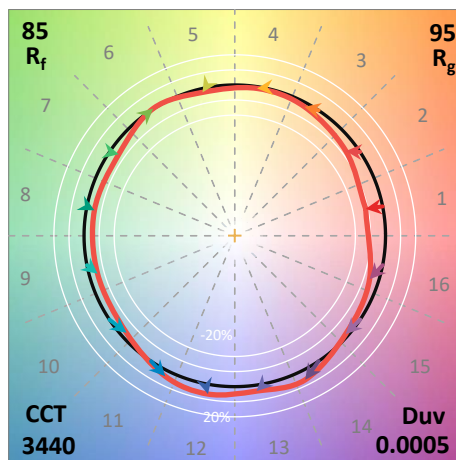
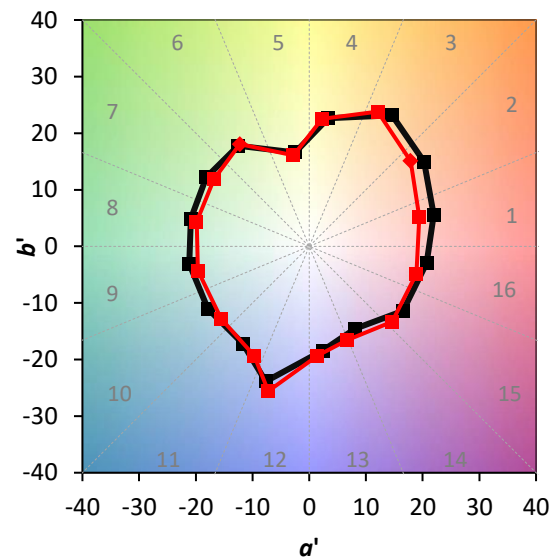
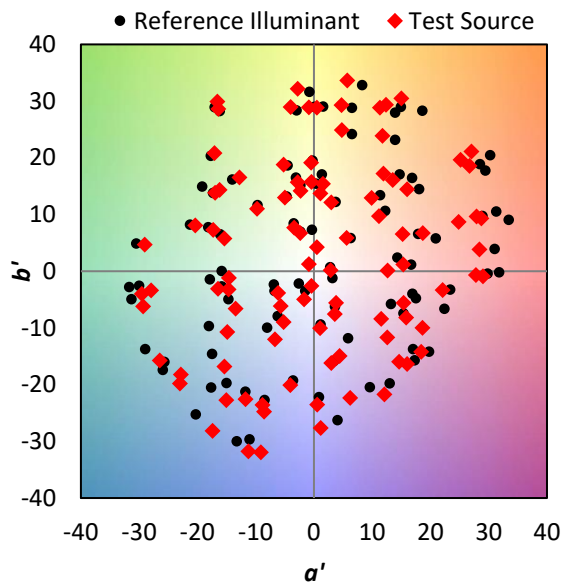
TM-30-18

### Summary

$R_f = 84.9$   
 $R_g = 94.6$   
 $CIE R_a = 84.2$   
 $R_9 = 13.6$

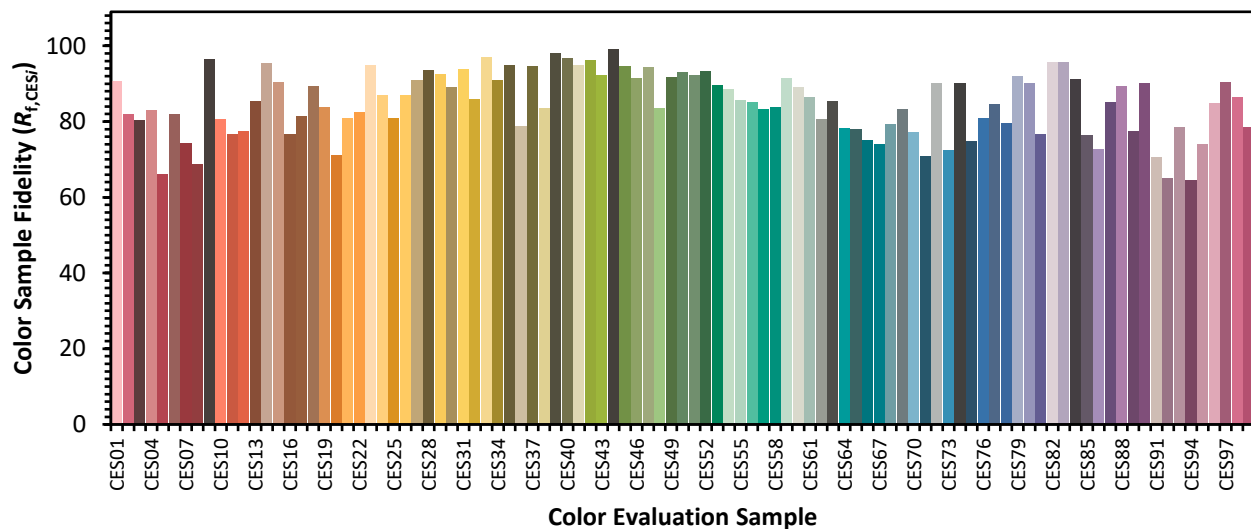


### Color Vector Graphics

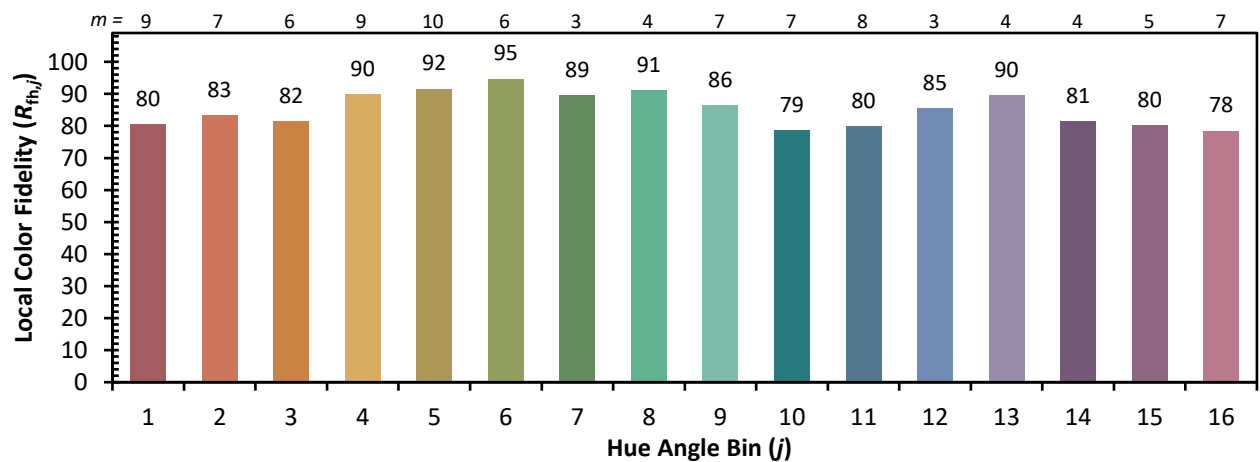
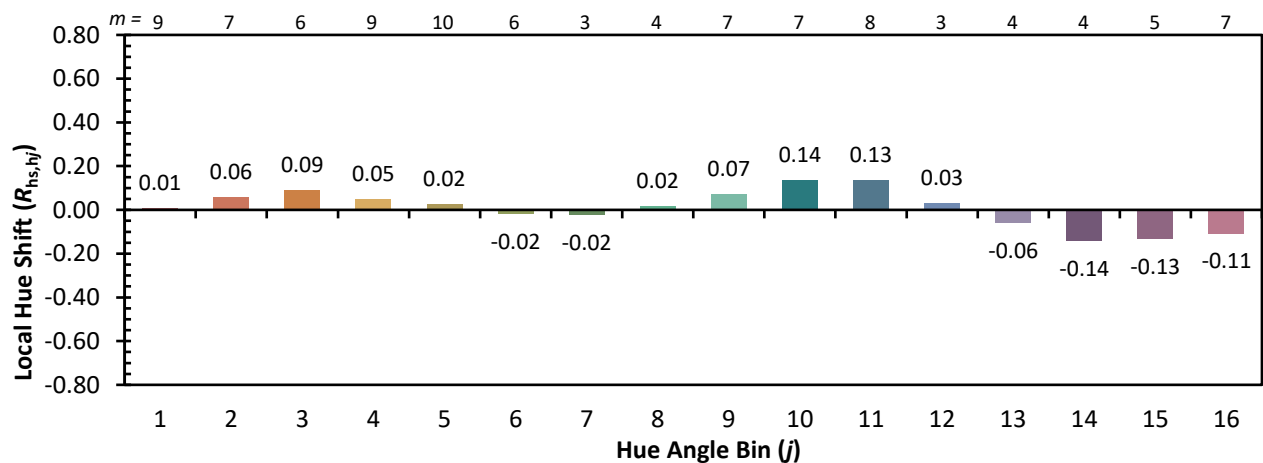
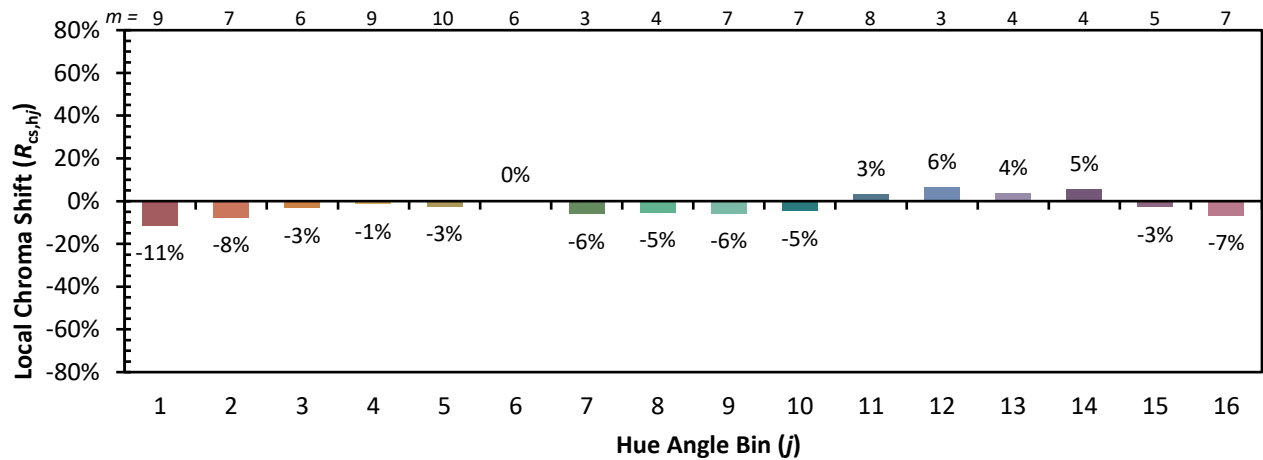


**Individual Sample Fidelity Index ( $R_{f,i}$ )**

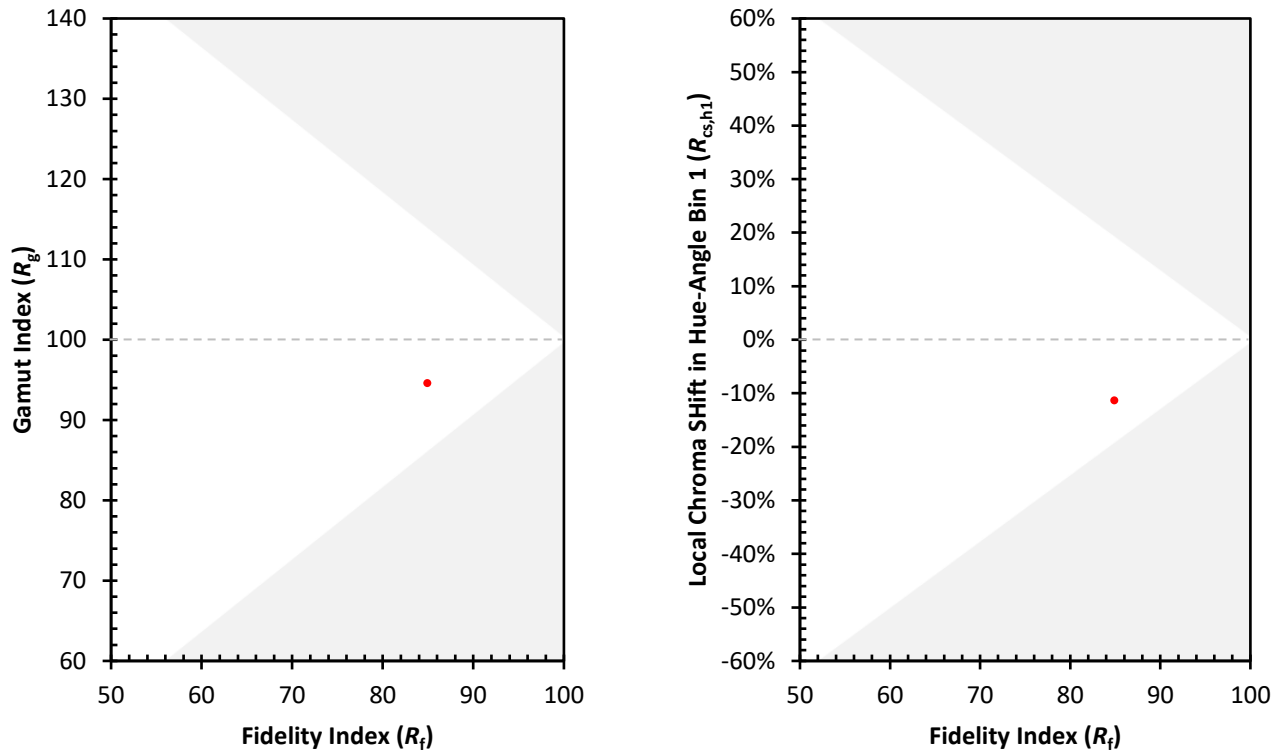
|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 86 | CES26 = 87 | CES51 = 92 | CES76 = 81 |
| CES02 = 62 | CES27 = 91 | CES52 = 93 | CES77 = 85 |
| CES03 = 31 | CES28 = 94 | CES53 = 90 | CES78 = 80 |
| CES04 = 70 | CES29 = 92 | CES54 = 89 | CES79 = 92 |
| CES05 = 49 | CES30 = 89 | CES55 = 86 | CES80 = 90 |
| CES06 = 51 | CES31 = 94 | CES56 = 85 | CES81 = 77 |
| CES07 = 41 | CES32 = 86 | CES57 = 83 | CES82 = 96 |
| CES08 = 40 | CES33 = 97 | CES58 = 84 | CES83 = 96 |
| CES09 = 29 | CES34 = 91 | CES59 = 91 | CES84 = 91 |
| CES10 = 75 | CES35 = 95 | CES60 = 89 | CES85 = 76 |
| CES11 = 58 | CES36 = 79 | CES61 = 87 | CES86 = 73 |
| CES12 = 64 | CES37 = 95 | CES62 = 81 | CES87 = 85 |
| CES13 = 43 | CES38 = 84 | CES63 = 85 | CES88 = 89 |
| CES14 = 74 | CES39 = 98 | CES64 = 78 | CES89 = 78 |
| CES15 = 71 | CES40 = 97 | CES65 = 78 | CES90 = 90 |
| CES16 = 47 | CES41 = 95 | CES66 = 75 | CES91 = 71 |
| CES17 = 50 | CES42 = 96 | CES67 = 74 | CES92 = 65 |
| CES18 = 56 | CES43 = 92 | CES68 = 79 | CES93 = 79 |
| CES19 = 72 | CES44 = 99 | CES69 = 83 | CES94 = 64 |
| CES20 = 66 | CES45 = 95 | CES70 = 77 | CES95 = 74 |
| CES21 = 86 | CES46 = 91 | CES71 = 71 | CES96 = 85 |
| CES22 = 78 | CES47 = 94 | CES72 = 90 | CES97 = 90 |
| CES23 = 92 | CES48 = 83 | CES73 = 72 | CES98 = 86 |
| CES24 = 90 | CES49 = 92 | CES74 = 90 | CES99 = 79 |
| CES25 = 72 | CES50 = 93 | CES75 = 75 |            |



### Color Rendition by Hue-Angle Bin



**Measure Comparisons**



(END OF REPORT)