

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: P1215823

Luminaire Tested: 24-ID2-55-CFD1-L940-U

Issue Date: 12/5/2025

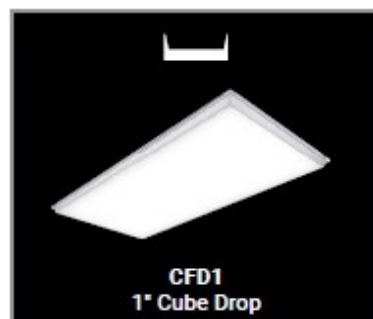
**Test Information**

Test Method: LM-79-2019  
Report Number: P1215823  
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-ID2-55-CFD1-L940-U  
Description: 2X4 IN DEPTH TROFFER WITH 1INCH CUBE DROP LENS  
Light Source: 4000K CCT, 90 CRI LEDS  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

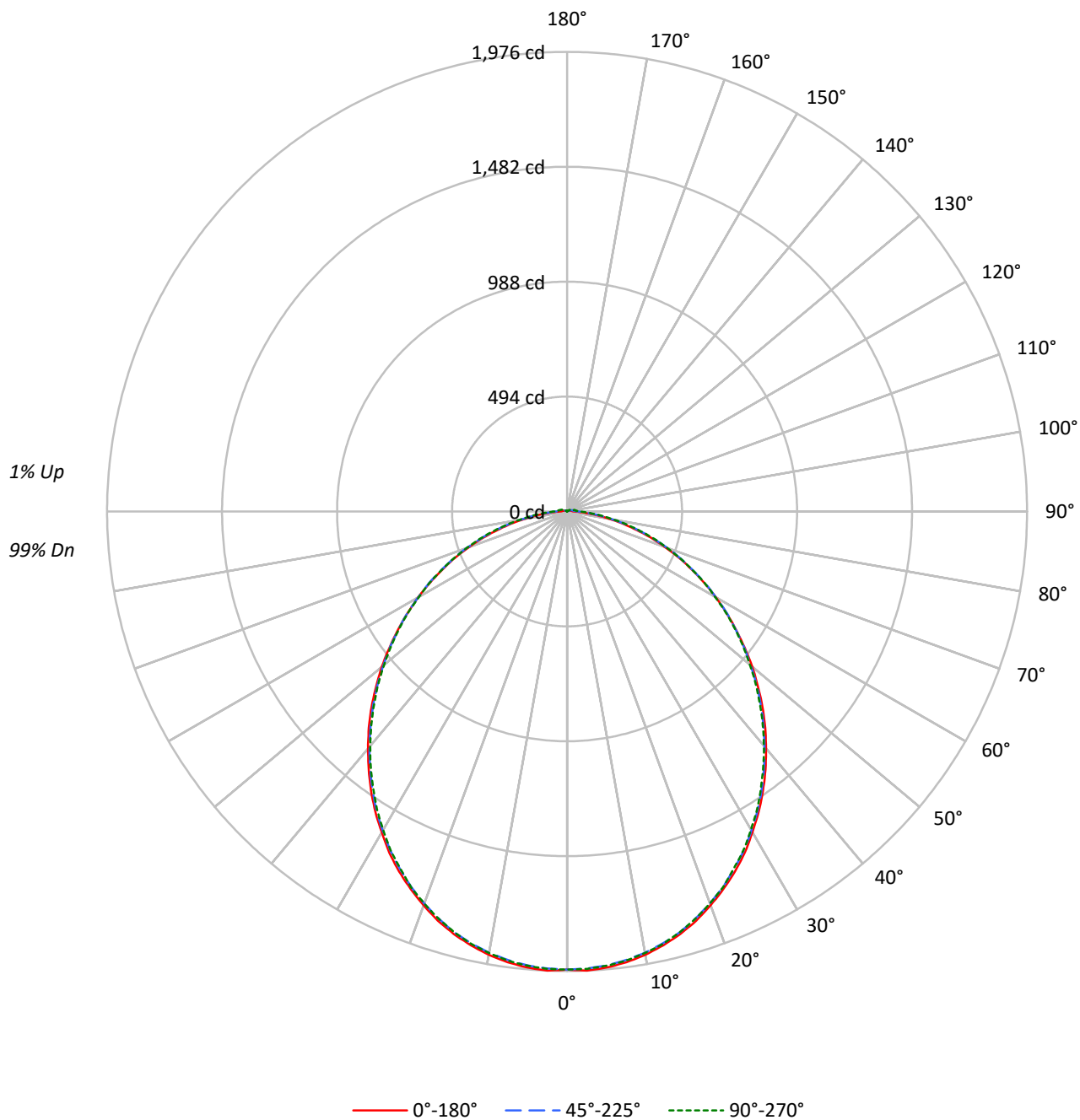
Lumens per Lamp: N/A  
Luminaire Lumens: 5235.3 lumens  
Efficiency: N/A  
Efficacy: 110.2 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.2 / 1.31  
Luminous Opening: Rectangular w/ Sides (W: 2' x L: 4' x H: 0.08')  
CIE Type: Direct

Input Watts (W): 47.5  
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: P1215823  
CATALOG NUMBER: 24-ID2-55-CFD1-L940-U

### Luminous Intensity Polar Plot



TEST NUMBER: P1215823

CATALOG NUMBER: 24-ID2-55-CFD1-L940-U

**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  |  | 0  |
| RCR |     |     |     |     |     |     |     |     |     |     |     |  |     |     |     |  |    |
| 0   | 119 | 119 | 119 | 119 | 116 | 116 | 116 | 116 | 110 | 110 | 110 |  | 105 | 105 | 105 |  | 99 |
| 1   | 108 | 104 | 99  | 96  | 106 | 101 | 97  | 94  | 97  | 94  | 91  |  | 93  | 90  | 88  |  | 83 |
| 2   | 99  | 91  | 84  | 78  | 96  | 89  | 82  | 77  | 85  | 80  | 75  |  | 81  | 77  | 73  |  | 69 |
| 3   | 90  | 80  | 72  | 65  | 88  | 78  | 71  | 65  | 75  | 68  | 63  |  | 72  | 66  | 62  |  | 58 |
| 4   | 83  | 71  | 62  | 55  | 80  | 69  | 61  | 55  | 67  | 60  | 54  |  | 64  | 58  | 53  |  | 50 |
| 5   | 76  | 63  | 54  | 48  | 74  | 62  | 54  | 48  | 60  | 53  | 47  |  | 58  | 51  | 46  |  | 44 |
| 6   | 70  | 57  | 48  | 42  | 68  | 56  | 48  | 42  | 54  | 47  | 41  |  | 52  | 46  | 41  |  | 38 |
| 7   | 65  | 52  | 43  | 37  | 64  | 51  | 43  | 37  | 49  | 42  | 37  |  | 48  | 41  | 36  |  | 34 |
| 8   | 61  | 47  | 39  | 33  | 59  | 47  | 39  | 33  | 45  | 38  | 33  |  | 44  | 37  | 33  |  | 30 |
| 9   | 57  | 44  | 35  | 30  | 55  | 43  | 35  | 30  | 42  | 35  | 30  |  | 41  | 34  | 29  |  | 27 |
| 10  | 53  | 40  | 32  | 27  | 52  | 40  | 32  | 27  | 39  | 32  | 27  |  | 38  | 31  | 27  |  | 25 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 2650 | 2650 | 2650 |
| 5°  | 2654 | 2636 | 2639 |
| 10° | 2635 | 2612 | 2616 |
| 15° | 2606 | 2579 | 2581 |
| 20° | 2562 | 2529 | 2531 |
| 25° | 2512 | 2470 | 2469 |
| 30° | 2445 | 2403 | 2399 |
| 35° | 2377 | 2326 | 2320 |
| 40° | 2297 | 2239 | 2236 |
| 45° | 2215 | 2151 | 2144 |
| 50° | 2123 | 2052 | 2048 |
| 55° | 2021 | 1954 | 1954 |
| 60° | 1921 | 1848 | 1846 |
| 65° | 1801 | 1738 | 1742 |
| 70° | 1668 | 1616 | 1623 |
| 75° | 1503 | 1445 | 1479 |
| 80° | 1294 | 1259 | 1309 |
| 85° | 1057 | 1081 | 1200 |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 2215 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 186.1  | 3.6       |
| 10°-20°   | 527.8  | 10.1      |
| 20°-30°   | 782.1  | 14.9      |
| 30°-40°   | 911.9  | 17.4      |
| 40°-50°   | 909.0  | 17.4      |
| 50°-60°   | 791.3  | 15.1      |
| 60°-70°   | 589.8  | 11.3      |
| 70°-80°   | 342.2  | 6.5       |
| 80°-90°   | 119.4  | 2.3       |
| 90°-100°  | 35.8   | 0.7       |
| 100°-110° | 21.5   | 0.4       |
| 110°-120° | 11.3   | 0.2       |
| 120°-130° | 4.9    | 0.1       |
| 130°-140° | 1.4    | 0.0       |
| 140°-150° | 0.5    | 0.0       |
| 150°-160° | 0.3    | 0.0       |
| 160°-170° | 0.0    | 0.0       |
| 170°-180° | 0.0    | 0.0       |
| 0°-30°    | 1496.0 | 28.6      |
| 0°-40°    | 2407.9 | 46.0      |
| 0°-60°    | 4108.2 | 78.5      |
| 0°-90°    | 5159.6 | 98.6      |
| 90°-120°  | 68.6   | 1.3       |
| 90°-150°  | 75.3   | 1.4       |
| 90°-180°  | 76.0   | 1.5       |
| 0°-180°   | 5235.3 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 1970 | 1970  | 1970 | 1970  | 1970 |      |
| 5°   | 1968 | 1962  | 1959 | 1957  | 1960 | 187  |
| 15°  | 1881 | 1874  | 1873 | 1868  | 1873 | 530  |
| 25°  | 1708 | 1702  | 1697 | 1695  | 1694 | 786  |
| 35°  | 1467 | 1463  | 1458 | 1453  | 1452 | 917  |
| 45°  | 1188 | 1182  | 1178 | 1174  | 1172 | 915  |
| 55°  | 886  | 888   | 883  | 884   | 880  | 793  |
| 65°  | 590  | 593   | 596  | 597   | 594  | 586  |
| 75°  | 311  | 317   | 322  | 330   | 327  | 330  |
| 85°  | 84   | 94    | 104  | 110   | 113  | 91   |
| 90°  | 28   | 36    | 46   | 53    | 55   | 18   |
| 95°  | 21   | 26    | 34   | 38    | 39   | 17   |
| 105° | 14   | 14    | 21   | 25    | 27   | 15   |
| 115° | 8    | 7     | 11   | 14    | 17   | 9    |
| 125° | 5    | 4     | 4    | 7     | 9    | 4    |
| 135° | 2    | 1     | 1    | 2     | 3    | 2    |
| 145° | 1    | 1     | 1    | 1     | 1    | 0    |
| 155° | 1    | 1     | 1    | 1     | 1    | 0    |
| 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°     | 1969.6 | 1969.6 | 1969.6 | 1969.6 | 1969.6 |
| 2.5°   | 1976.0 | 1970.3 | 1966.1 | 1964.6 | 1968.2 |
| 5°     | 1968.2 | 1961.8 | 1958.9 | 1956.8 | 1960.4 |
| 7.5°   | 1954.7 | 1949.7 | 1945.4 | 1943.3 | 1947.5 |
| 10°    | 1935.4 | 1929.0 | 1926.2 | 1924.0 | 1928.3 |
| 12.5°  | 1910.5 | 1904.8 | 1902.0 | 1899.8 | 1904.1 |
| 15°    | 1880.6 | 1874.2 | 1872.8 | 1868.5 | 1872.8 |
| 17.5°  | 1845.0 | 1839.3 | 1835.0 | 1833.6 | 1835.7 |
| 20°    | 1802.2 | 1798.7 | 1793.7 | 1792.3 | 1793.7 |
| 22.5°  | 1756.6 | 1752.4 | 1748.1 | 1745.2 | 1749.5 |
| 25°    | 1707.5 | 1702.5 | 1696.8 | 1694.7 | 1694.0 |
| 27.5°  | 1654.1 | 1647.7 | 1643.4 | 1639.1 | 1642.0 |
| 30°    | 1592.1 | 1589.2 | 1584.3 | 1581.4 | 1580.0 |
| 32.5°  | 1532.3 | 1530.1 | 1523.7 | 1518.0 | 1519.4 |
| 35°    | 1467.4 | 1463.2 | 1458.2 | 1453.2 | 1451.8 |
| 37.5°  | 1399.8 | 1395.5 | 1389.8 | 1385.5 | 1384.8 |
| 40°    | 1329.9 | 1327.1 | 1320.0 | 1315.7 | 1315.7 |
| 42.5°  | 1260.1 | 1256.6 | 1248.7 | 1246.6 | 1244.5 |
| 45°    | 1187.5 | 1182.5 | 1178.2 | 1173.9 | 1171.8 |
| 47.5°  | 1112.0 | 1109.1 | 1104.1 | 1101.3 | 1099.9 |
| 50°    | 1038.6 | 1035.0 | 1030.0 | 1027.9 | 1025.1 |
| 52.5°  | 961.7  | 961.7  | 958.1  | 956.0  | 953.1  |
| 55°    | 886.2  | 888.3  | 883.3  | 884.0  | 880.5  |
| 57.5°  | 811.4  | 813.5  | 814.2  | 809.2  | 808.5  |
| 60°    | 738.7  | 739.4  | 737.3  | 737.3  | 733.7  |
| 62.5°  | 663.9  | 666.0  | 669.6  | 667.5  | 666.8  |
| 65°    | 589.8  | 593.4  | 595.5  | 596.9  | 594.1  |
| 67.5°  | 520.7  | 524.3  | 527.8  | 526.4  | 525.7  |
| 70°    | 447.4  | 451.6  | 458.7  | 461.6  | 458.0  |
| 72.5°  | 379.0  | 384.7  | 388.2  | 392.5  | 393.9  |
| 75°    | 310.6  | 317.0  | 322.0  | 329.8  | 327.0  |
| 77.5°  | 246.5  | 254.3  | 260.7  | 267.1  | 267.1  |
| 80°    | 185.9  | 193.8  | 201.6  | 208.7  | 207.3  |
| 82.5°  | 131.1  | 140.3  | 148.2  | 156.0  | 157.4  |
| 85°    | 84.1   | 94.0   | 104.0  | 110.4  | 113.3  |
| 87.5°  | 50.6   | 58.4   | 69.1   | 76.2   | 79.1   |
| 90°    | 28.5   | 36.3   | 46.3   | 53.4   | 54.9   |
| 92.5°  | 23.5   | 28.5   | 37.0   | 43.5   | 44.2   |
| 95°    | 21.4   | 25.6   | 33.5   | 37.8   | 39.2   |
| 97.5°  | 19.2   | 22.1   | 29.9   | 34.9   | 36.3   |
| 100°   | 17.8   | 19.2   | 26.4   | 31.3   | 32.8   |
| 102.5° | 15.7   | 17.1   | 23.5   | 27.8   | 29.9   |
| 105°   | 14.2   | 14.2   | 20.7   | 24.9   | 27.1   |
| 107.5° | 12.8   | 12.1   | 17.8   | 22.1   | 24.2   |
| 110°   | 11.4   | 10.0   | 15.7   | 19.2   | 22.1   |

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CATALOG NUMBER: 24-ID2-55-CFD1-L940-U

**CANDELA DISTRIBUTION (continued):**

|        | 0°   | 22.5° | 45°  | 67.5° | 90°  |
|--------|------|-------|------|-------|------|
| 112.5° | 10.0 | 8.5   | 12.8 | 16.4  | 19.2 |
| 115°   | 8.5  | 7.1   | 10.7 | 14.2  | 17.1 |
| 117.5° | 7.1  | 6.4   | 8.5  | 12.1  | 15.0 |
| 120°   | 6.4  | 5.0   | 7.1  | 10.7  | 12.8 |
| 122.5° | 5.7  | 4.3   | 5.0  | 8.5   | 10.7 |
| 125°   | 5.0  | 3.6   | 3.6  | 7.1   | 9.3  |
| 127.5° | 3.6  | 2.8   | 2.1  | 5.7   | 7.1  |
| 130°   | 3.6  | 2.1   | 1.4  | 4.3   | 5.7  |
| 132.5° | 2.8  | 2.1   | 0.7  | 2.8   | 4.3  |
| 135°   | 2.1  | 1.4   | 0.7  | 2.1   | 2.8  |
| 137.5° | 1.4  | 1.4   | 0.7  | 1.4   | 2.1  |
| 140°   | 1.4  | 0.7   | 0.7  | 0.7   | 1.4  |
| 142.5° | 0.7  | 0.7   | 0.7  | 0.7   | 0.7  |
| 145°   | 0.7  | 0.7   | 0.7  | 0.7   | 0.7  |
| 147.5° | 0.7  | 0.7   | 0.7  | 0.7   | 0.7  |
| 150°   | 0.7  | 0.7   | 0.7  | 0.7   | 0.7  |
| 152.5° | 0.7  | 0.7   | 0.7  | 0.7   | 0.7  |
| 155°   | 0.7  | 0.7   | 0.7  | 0.7   | 0.7  |
| 157.5° | 0.7  | 0.7   | 0.7  | 0.7   | 0.7  |
| 160°   | 1.4  | 0.7   | 0.7  | 0.7   | 0.7  |
| 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  |

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**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 | 14.16            | 15.74 | 14.55 | 16.09 | 16.44 | 14.19          | 15.78 | 14.58 | 16.12 | 16.47 |
|                 | 3H   | 15.84            | 17.27 | 16.24 | 17.63 | 18.03 | 15.95          | 17.38 | 16.35 | 17.74 | 18.14 |
|                 | 4H   | 16.45            | 17.79 | 16.87 | 18.17 | 18.58 | 16.62          | 17.97 | 17.04 | 18.35 | 18.76 |
|                 | 6H   | 16.87            | 18.12 | 17.31 | 18.52 | 18.94 | 17.14          | 18.39 | 17.57 | 18.78 | 19.21 |
|                 | 8H   | 17.00            | 18.19 | 17.45 | 18.61 | 19.04 | 17.32          | 18.52 | 17.77 | 18.94 | 19.37 |
|                 | 12H  | 17.08            | 18.22 | 17.53 | 18.63 | 19.10 | 17.48          | 18.62 | 17.93 | 19.03 | 19.50 |
| 4H              | 2H   | 14.76            | 16.11 | 15.18 | 16.48 | 16.90 | 14.78          | 16.13 | 15.21 | 16.51 | 16.92 |
|                 | 3H   | 16.66            | 17.79 | 17.09 | 18.22 | 18.65 | 16.76          | 17.89 | 17.19 | 18.32 | 18.75 |
|                 | 4H   | 17.39            | 18.41 | 17.84 | 18.85 | 19.32 | 17.56          | 18.59 | 18.02 | 19.03 | 19.50 |
|                 | 6H   | 17.93            | 18.83 | 18.41 | 19.30 | 19.79 | 18.21          | 19.11 | 18.69 | 19.58 | 20.07 |
|                 | 8H   | 18.11            | 18.95 | 18.59 | 19.41 | 19.91 | 18.45          | 19.29 | 18.93 | 19.76 | 20.26 |
|                 | 12H  | 18.23            | 18.98 | 18.73 | 19.48 | 19.99 | 18.66          | 19.41 | 19.16 | 19.92 | 20.42 |
| 8H              | 4H   | 17.69            | 18.53 | 18.17 | 19.00 | 19.50 | 17.84          | 18.68 | 18.33 | 19.15 | 19.65 |
|                 | 6H   | 18.35            | 19.05 | 18.87 | 19.57 | 20.08 | 18.62          | 19.32 | 19.13 | 19.83 | 20.34 |
|                 | 8H   | 18.60            | 19.22 | 19.13 | 19.75 | 20.27 | 18.94          | 19.57 | 19.47 | 20.10 | 20.62 |
|                 | 12H  | 18.79            | 19.35 | 19.32 | 19.86 | 20.45 | 19.24          | 19.80 | 19.77 | 20.31 | 20.91 |
| 12H             | 4H   | 17.72            | 18.48 | 18.23 | 18.98 | 19.48 | 17.87          | 18.63 | 18.37 | 19.13 | 19.63 |
|                 | 6H   | 18.41            | 19.04 | 18.94 | 19.57 | 20.09 | 18.66          | 19.29 | 19.20 | 19.83 | 20.35 |
|                 | 8H   | 18.71            | 19.27 | 19.24 | 19.79 | 20.38 | 19.04          | 19.60 | 19.57 | 20.12 | 20.71 |



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

Report Prepared for

Cooper Lighting Solutions

Corelite

Report Number: SP1-2506-458-11

Test Date: 08/26/2025

Luminaire Tested: 22ID2-55-CFR1-L940-U

Data in this report applies to families of products including 22ID2-55-CFR1-L940-U

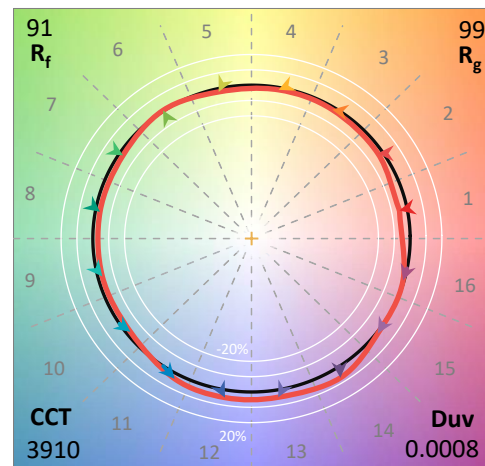
### Test Information

Test Method: LM-79-2019  
 Report Number: SP1-2506-458-11  
 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-L940-U**  
 Description: 2X2 CGTX WITH INDEPTH FRAME AND CFR1 LENS - 5500 LUMEN 4000K 90CRI

### Spectral Parameters

CCT (K): 3910  
 CIE  $u'$ : 0.2263  
 CIE  $v'$ : 0.5043  
 Duv: 0.0008  
 CIE x: 0.3851  
 CIE y: 0.3813  
 CIE z: 0.2336  
 Peak Wavelength (nm): 451  
 Dominant Wavelength (nm): 578  
 Purity: 30.01895  
 R<sub>f</sub>: 90.8  
 R<sub>g</sub>: 98.8

CRI (Ra): 92.4  
 R1: 92.5  
 R2: 94.9  
 R3: 95.8  
 R4: 92.7  
 R5: 91.7  
 R6: 92.1  
 R7: 94.3  
 R8: 85.2  
 R9: 62.0  
 R10: 87.0  
 R11: 92.8  
 R12: 71.7  
 R13: 93.2  
 R14: 97.3  
 R15: 89.6



### Test Conditions

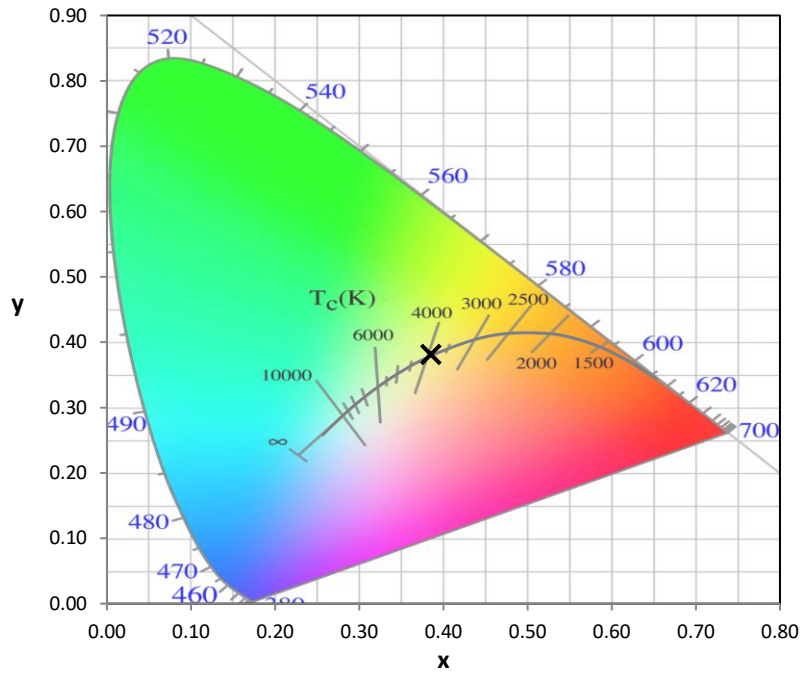
Stabilization Time: 31M  
 Operation Time: 1H 31M  
 Sphere Temperature (°C): 25.2.

REPORT NUMBER: SP1-2506-458-11

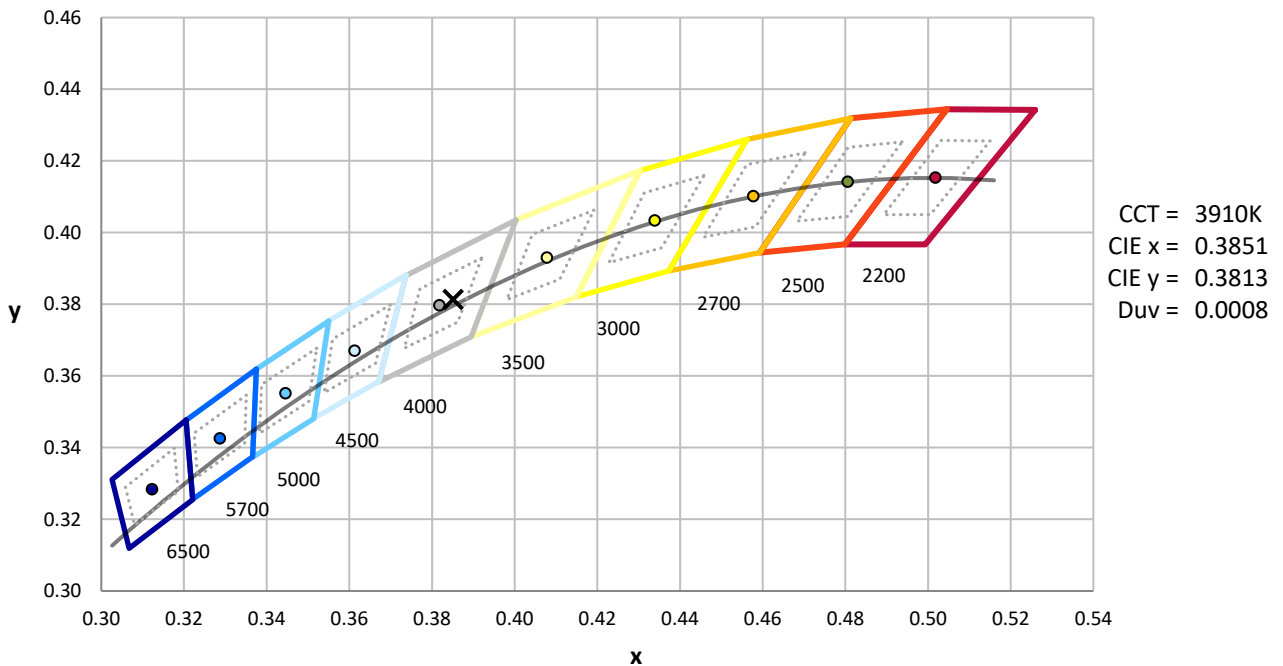
| Measurement and Test Equipment |                       |                  |                      |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument                     | Identification Number | Calibration Date | Calibration Due Date |
| 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: SP1-2506-458-11

**CIE 1931 Chromaticity Diagram**



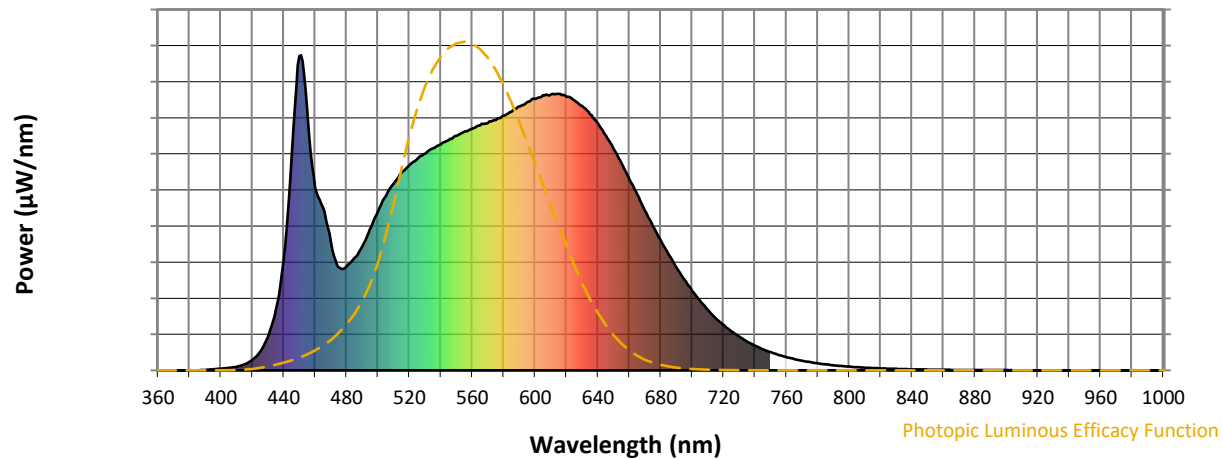
**CIE 1931 Chromaticity Diagram with 2017 ANSI 7-Step and 4-Step Quadrangles**



Point lies inside the ANSI 4000K 4-step quadrangle

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### Photopic Flux vs. Wavelength

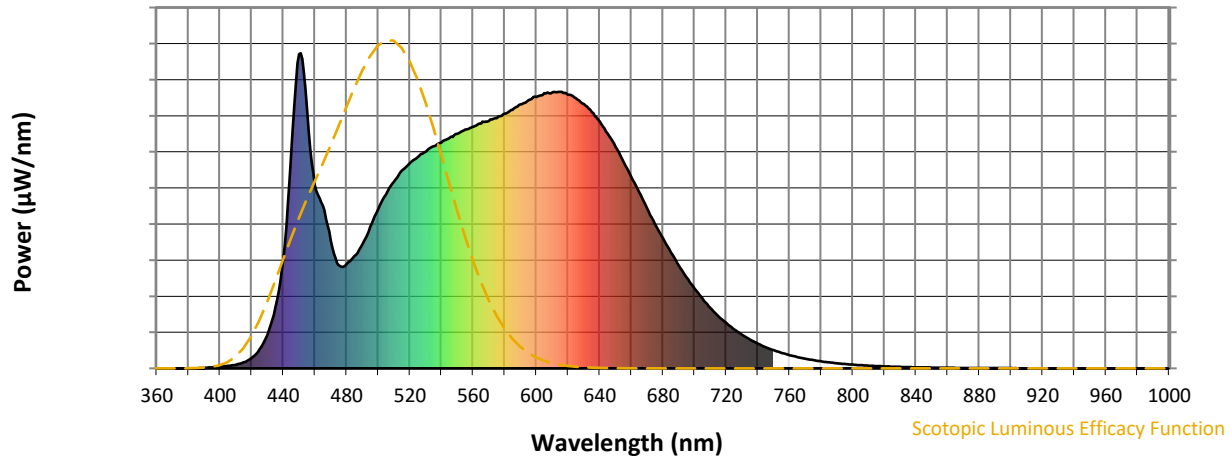


### Photopic Lumens: NR

| $\lambda$<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               | 394                                  | NR                             | 620               | 868                                  | NR                             | 750               | 58                                   | NR                             | 880               | 1                                    | NR                             |
| 365               | 0                                    | NR                             | 495               | 449                                  | NR                             | 625               | 858                                  | NR                             | 755               | 49                                   | NR                             | 885               | 1                                    | NR                             |
| 370               | 0                                    | NR                             | 500               | 505                                  | NR                             | 630               | 839                                  | NR                             | 760               | 42                                   | NR                             | 890               | 1                                    | NR                             |
| 375               | 0                                    | NR                             | 505               | 553                                  | NR                             | 635               | 813                                  | NR                             | 765               | 36                                   | NR                             | 895               | 1                                    | NR                             |
| 380               | 0                                    | NR                             | 510               | 593                                  | NR                             | 640               | 783                                  | NR                             | 770               | 31                                   | NR                             | 900               | 1                                    | NR                             |
| 385               | 0                                    | NR                             | 515               | 628                                  | NR                             | 645               | 746                                  | NR                             | 775               | 26                                   | NR                             | 905               | 1                                    | NR                             |
| 390               | 1                                    | NR                             | 520               | 651                                  | NR                             | 650               | 702                                  | NR                             | 780               | 22                                   | NR                             | 910               | 0                                    | NR                             |
| 395               | 4                                    | NR                             | 525               | 670                                  | NR                             | 655               | 657                                  | NR                             | 785               | 19                                   | NR                             | 915               | 0                                    | NR                             |
| 400               | 5                                    | NR                             | 530               | 687                                  | NR                             | 660               | 607                                  | NR                             | 790               | 16                                   | NR                             | 920               | 0                                    | NR                             |
| 405               | 8                                    | NR                             | 535               | 705                                  | NR                             | 665               | 559                                  | NR                             | 795               | 14                                   | NR                             | 925               | 0                                    | NR                             |
| 410               | 12                                   | NR                             | 540               | 717                                  | NR                             | 670               | 507                                  | NR                             | 800               | 12                                   | NR                             | 930               | 0                                    | NR                             |
| 415               | 19                                   | NR                             | 545               | 731                                  | NR                             | 675               | 458                                  | NR                             | 805               | 10                                   | NR                             | 935               | 0                                    | NR                             |
| 420               | 34                                   | NR                             | 550               | 745                                  | NR                             | 680               | 413                                  | NR                             | 810               | 9                                    | NR                             | 940               | 0                                    | NR                             |
| 425               | 60                                   | NR                             | 555               | 757                                  | NR                             | 685               | 367                                  | NR                             | 815               | 7                                    | NR                             | 945               | 0                                    | NR                             |
| 430               | 107                                  | NR                             | 560               | 767                                  | NR                             | 690               | 328                                  | NR                             | 820               | 6                                    | NR                             | 950               | 0                                    | NR                             |
| 435               | 194                                  | NR                             | 565               | 777                                  | NR                             | 695               | 289                                  | NR                             | 825               | 5                                    | NR                             | 955               | 0                                    | NR                             |
| 440               | 349                                  | NR                             | 570               | 785                                  | NR                             | 700               | 253                                  | NR                             | 830               | 5                                    | NR                             | 960               | 0                                    | NR                             |
| 445               | 678                                  | NR                             | 575               | 794                                  | NR                             | 705               | 221                                  | NR                             | 835               | 4                                    | NR                             | 965               | 0                                    | NR                             |
| 450               | 997                                  | NR                             | 580               | 809                                  | NR                             | 710               | 192                                  | NR                             | 840               | 3                                    | NR                             | 970               | 0                                    | NR                             |
| 455               | 819                                  | NR                             | 585               | 820                                  | NR                             | 715               | 165                                  | NR                             | 845               | 3                                    | NR                             | 975               | 0                                    | NR                             |
| 460               | 581                                  | NR                             | 590               | 838                                  | NR                             | 720               | 144                                  | NR                             | 850               | 2                                    | NR                             | 980               | 0                                    | NR                             |
| 465               | 517                                  | NR                             | 595               | 851                                  | NR                             | 725               | 124                                  | NR                             | 855               | 2                                    | NR                             | 985               | 0                                    | NR                             |
| 470               | 406                                  | NR                             | 600               | 861                                  | NR                             | 730               | 107                                  | NR                             | 860               | 2                                    | NR                             | 990               | 0                                    | NR                             |
| 475               | 327                                  | NR                             | 605               | 873                                  | NR                             | 735               | 91                                   | NR                             | 865               | 2                                    | NR                             | 995               | 0                                    | NR                             |
| 480               | 330                                  | NR                             | 610               | 875                                  | NR                             | 740               | 78                                   | NR                             | 870               | 1                                    | NR                             | 1000              | 0                                    | NR                             |
| 485               | 356                                  | NR                             | 615               | 877                                  | NR                             | 745               | 67                                   | NR                             | 875               | 1                                    | NR                             |                   |                                      |                                |

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### Scotopic Flux vs. Wavelength



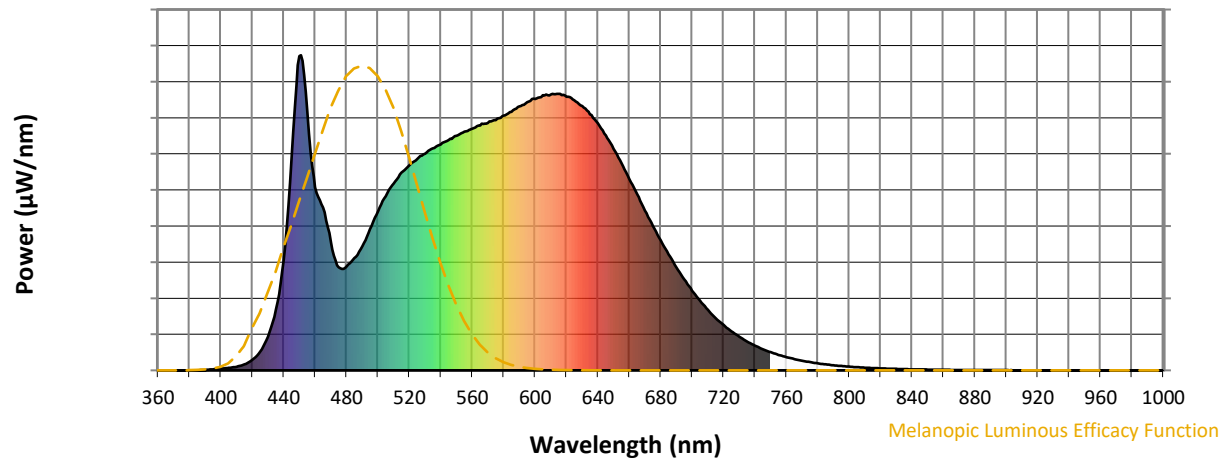
Scotopic Lumens: NR

S/P: 1.75

| λ<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>(φ/nm) |
|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|
| 360       | 0                           | NR               | 490       | 394                         | NR               | 620       | 868                         | NR               | 750       | 58                          | NR               | 880       | 1                           | NR               |
| 365       | 0                           | NR               | 495       | 449                         | NR               | 625       | 858                         | NR               | 755       | 49                          | NR               | 885       | 1                           | NR               |
| 370       | 0                           | NR               | 500       | 505                         | NR               | 630       | 839                         | NR               | 760       | 42                          | NR               | 890       | 1                           | NR               |
| 375       | 0                           | NR               | 505       | 553                         | NR               | 635       | 813                         | NR               | 765       | 36                          | NR               | 895       | 1                           | NR               |
| 380       | 0                           | NR               | 510       | 593                         | NR               | 640       | 783                         | NR               | 770       | 31                          | NR               | 900       | 1                           | NR               |
| 385       | 0                           | NR               | 515       | 628                         | NR               | 645       | 746                         | NR               | 775       | 26                          | NR               | 905       | 1                           | NR               |
| 390       | 1                           | NR               | 520       | 651                         | NR               | 650       | 702                         | NR               | 780       | 22                          | NR               | 910       | 0                           | NR               |
| 395       | 4                           | NR               | 525       | 670                         | NR               | 655       | 657                         | NR               | 785       | 19                          | NR               | 915       | 0                           | NR               |
| 400       | 5                           | NR               | 530       | 687                         | NR               | 660       | 607                         | NR               | 790       | 16                          | NR               | 920       | 0                           | NR               |
| 405       | 8                           | NR               | 535       | 705                         | NR               | 665       | 559                         | NR               | 795       | 14                          | NR               | 925       | 0                           | NR               |
| 410       | 12                          | NR               | 540       | 717                         | NR               | 670       | 507                         | NR               | 800       | 12                          | NR               | 930       | 0                           | NR               |
| 415       | 19                          | NR               | 545       | 731                         | NR               | 675       | 458                         | NR               | 805       | 10                          | NR               | 935       | 0                           | NR               |
| 420       | 34                          | NR               | 550       | 745                         | NR               | 680       | 413                         | NR               | 810       | 9                           | NR               | 940       | 0                           | NR               |
| 425       | 60                          | NR               | 555       | 757                         | NR               | 685       | 367                         | NR               | 815       | 7                           | NR               | 945       | 0                           | NR               |
| 430       | 107                         | NR               | 560       | 767                         | NR               | 690       | 328                         | NR               | 820       | 6                           | NR               | 950       | 0                           | NR               |
| 435       | 194                         | NR               | 565       | 777                         | NR               | 695       | 289                         | NR               | 825       | 5                           | NR               | 955       | 0                           | NR               |
| 440       | 349                         | NR               | 570       | 785                         | NR               | 700       | 253                         | NR               | 830       | 5                           | NR               | 960       | 0                           | NR               |
| 445       | 678                         | NR               | 575       | 794                         | NR               | 705       | 221                         | NR               | 835       | 4                           | NR               | 965       | 0                           | NR               |
| 450       | 997                         | NR               | 580       | 809                         | NR               | 710       | 192                         | NR               | 840       | 3                           | NR               | 970       | 0                           | NR               |
| 455       | 819                         | NR               | 585       | 820                         | NR               | 715       | 165                         | NR               | 845       | 3                           | NR               | 975       | 0                           | NR               |
| 460       | 581                         | NR               | 590       | 838                         | NR               | 720       | 144                         | NR               | 850       | 2                           | NR               | 980       | 0                           | NR               |
| 465       | 517                         | NR               | 595       | 851                         | NR               | 725       | 124                         | NR               | 855       | 2                           | NR               | 985       | 0                           | NR               |
| 470       | 406                         | NR               | 600       | 861                         | NR               | 730       | 107                         | NR               | 860       | 2                           | NR               | 990       | 0                           | NR               |
| 475       | 327                         | NR               | 605       | 873                         | NR               | 735       | 91                          | NR               | 865       | 2                           | NR               | 995       | 0                           | NR               |
| 480       | 330                         | NR               | 610       | 875                         | NR               | 740       | 78                          | NR               | 870       | 1                           | NR               | 1000      | 0                           | NR               |
| 485       | 356                         | NR               | 615       | 877                         | NR               | 745       | 67                          | NR               | 875       | 1                           | NR               |           |                             |                  |

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### Melanopic Flux vs. Wavelength



Melanopic Lumens: NR

M/P: 3.61

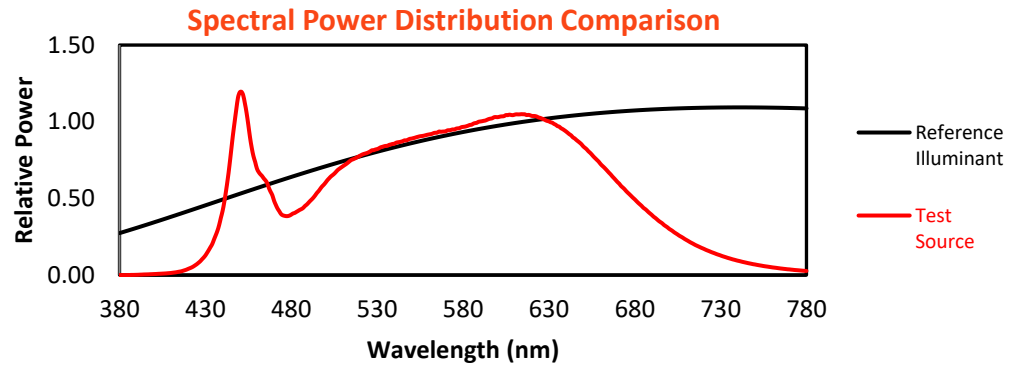
| λ<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>(φ/nm) |
|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|
| 360       | 0                           | NR               | 490       | 394                         | NR               | 620       | 868                         | NR               | 750       | 58                          | NR               | 880       | 1                           | NR               |
| 365       | 0                           | NR               | 495       | 449                         | NR               | 625       | 858                         | NR               | 755       | 49                          | NR               | 885       | 1                           | NR               |
| 370       | 0                           | NR               | 500       | 505                         | NR               | 630       | 839                         | NR               | 760       | 42                          | NR               | 890       | 1                           | NR               |
| 375       | 0                           | NR               | 505       | 553                         | NR               | 635       | 813                         | NR               | 765       | 36                          | NR               | 895       | 1                           | NR               |
| 380       | 0                           | NR               | 510       | 593                         | NR               | 640       | 783                         | NR               | 770       | 31                          | NR               | 900       | 1                           | NR               |
| 385       | 0                           | NR               | 515       | 628                         | NR               | 645       | 746                         | NR               | 775       | 26                          | NR               | 905       | 1                           | NR               |
| 390       | 1                           | NR               | 520       | 651                         | NR               | 650       | 702                         | NR               | 780       | 22                          | NR               | 910       | 0                           | NR               |
| 395       | 4                           | NR               | 525       | 670                         | NR               | 655       | 657                         | NR               | 785       | 19                          | NR               | 915       | 0                           | NR               |
| 400       | 5                           | NR               | 530       | 687                         | NR               | 660       | 607                         | NR               | 790       | 16                          | NR               | 920       | 0                           | NR               |
| 405       | 8                           | NR               | 535       | 705                         | NR               | 665       | 559                         | NR               | 795       | 14                          | NR               | 925       | 0                           | NR               |
| 410       | 12                          | NR               | 540       | 717                         | NR               | 670       | 507                         | NR               | 800       | 12                          | NR               | 930       | 0                           | NR               |
| 415       | 19                          | NR               | 545       | 731                         | NR               | 675       | 458                         | NR               | 805       | 10                          | NR               | 935       | 0                           | NR               |
| 420       | 34                          | NR               | 550       | 745                         | NR               | 680       | 413                         | NR               | 810       | 9                           | NR               | 940       | 0                           | NR               |
| 425       | 60                          | NR               | 555       | 757                         | NR               | 685       | 367                         | NR               | 815       | 7                           | NR               | 945       | 0                           | NR               |
| 430       | 107                         | NR               | 560       | 767                         | NR               | 690       | 328                         | NR               | 820       | 6                           | NR               | 950       | 0                           | NR               |
| 435       | 194                         | NR               | 565       | 777                         | NR               | 695       | 289                         | NR               | 825       | 5                           | NR               | 955       | 0                           | NR               |
| 440       | 349                         | NR               | 570       | 785                         | NR               | 700       | 253                         | NR               | 830       | 5                           | NR               | 960       | 0                           | NR               |
| 445       | 678                         | NR               | 575       | 794                         | NR               | 705       | 221                         | NR               | 835       | 4                           | NR               | 965       | 0                           | NR               |
| 450       | 997                         | NR               | 580       | 809                         | NR               | 710       | 192                         | NR               | 840       | 3                           | NR               | 970       | 0                           | NR               |
| 455       | 819                         | NR               | 585       | 820                         | NR               | 715       | 165                         | NR               | 845       | 3                           | NR               | 975       | 0                           | NR               |
| 460       | 581                         | NR               | 590       | 838                         | NR               | 720       | 144                         | NR               | 850       | 2                           | NR               | 980       | 0                           | NR               |
| 465       | 517                         | NR               | 595       | 851                         | NR               | 725       | 124                         | NR               | 855       | 2                           | NR               | 985       | 0                           | NR               |
| 470       | 406                         | NR               | 600       | 861                         | NR               | 730       | 107                         | NR               | 860       | 2                           | NR               | 990       | 0                           | NR               |
| 475       | 327                         | NR               | 605       | 873                         | NR               | 735       | 91                          | NR               | 865       | 2                           | NR               | 995       | 0                           | NR               |
| 480       | 330                         | NR               | 610       | 875                         | NR               | 740       | 78                          | NR               | 870       | 1                           | NR               | 1000      | 0                           | NR               |
| 485       | 356                         | NR               | 615       | 877                         | NR               | 745       | 67                          | NR               | 875       | 1                           | NR               |           |                             |                  |

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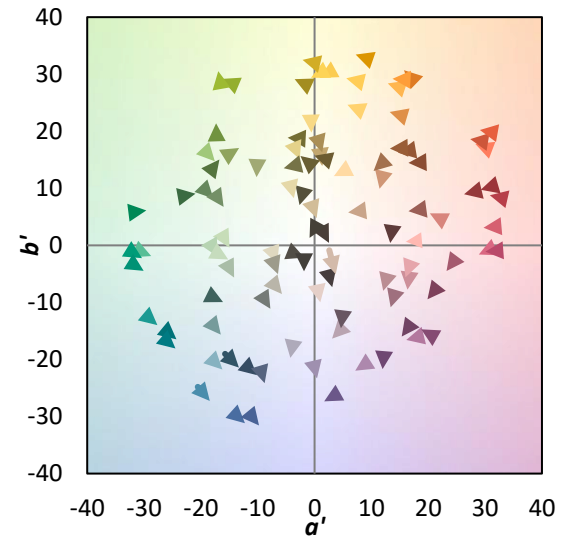
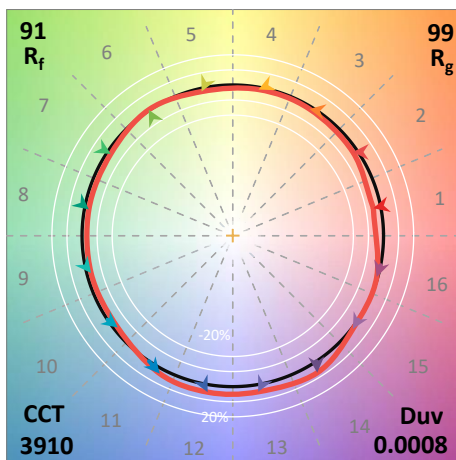
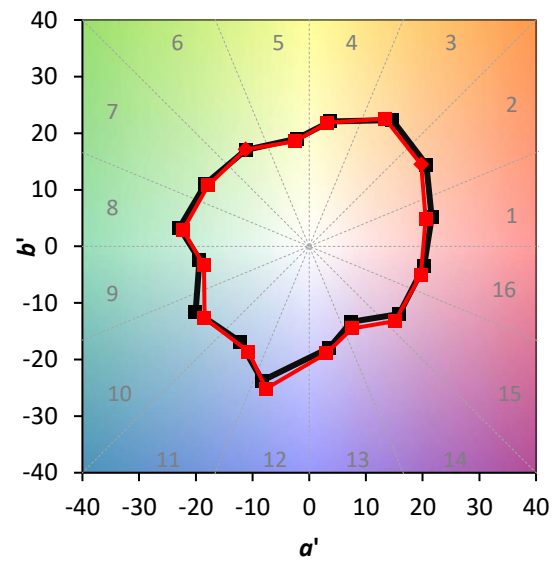
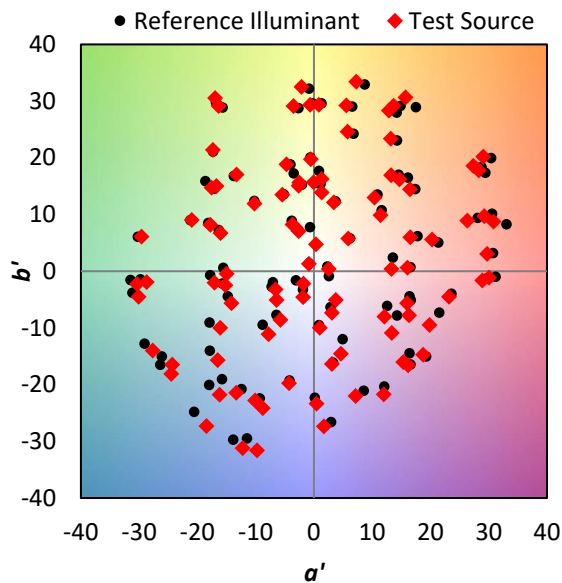
TM-30-18

### Summary

$R_f = 90.8$   
 $R_g = 98.8$   
 $CIE R_a = 92.4$   
 $R_9 = 62.0$



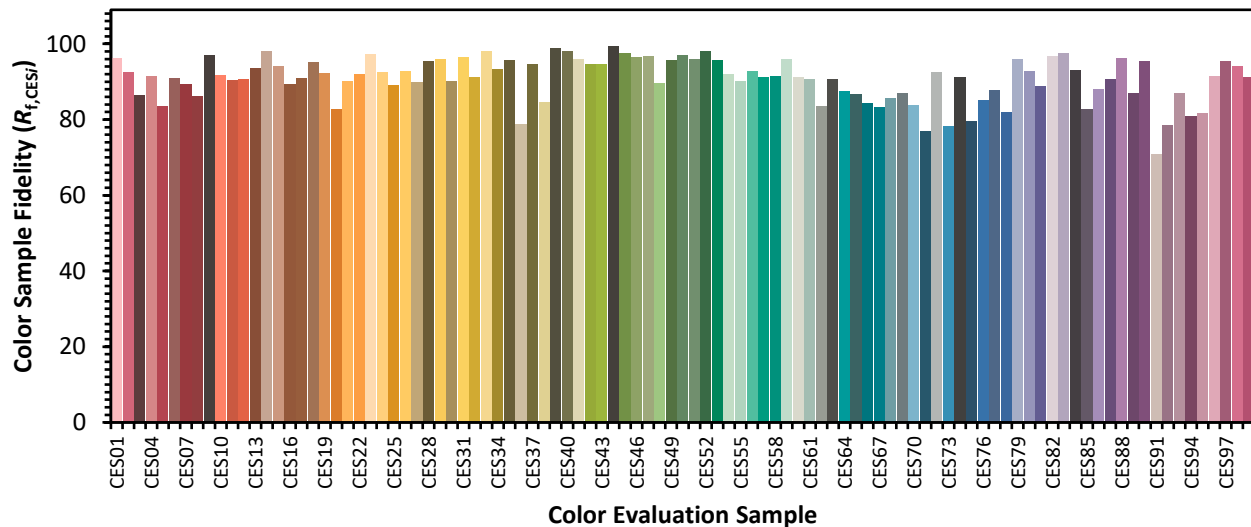
### Color Vector Graphics



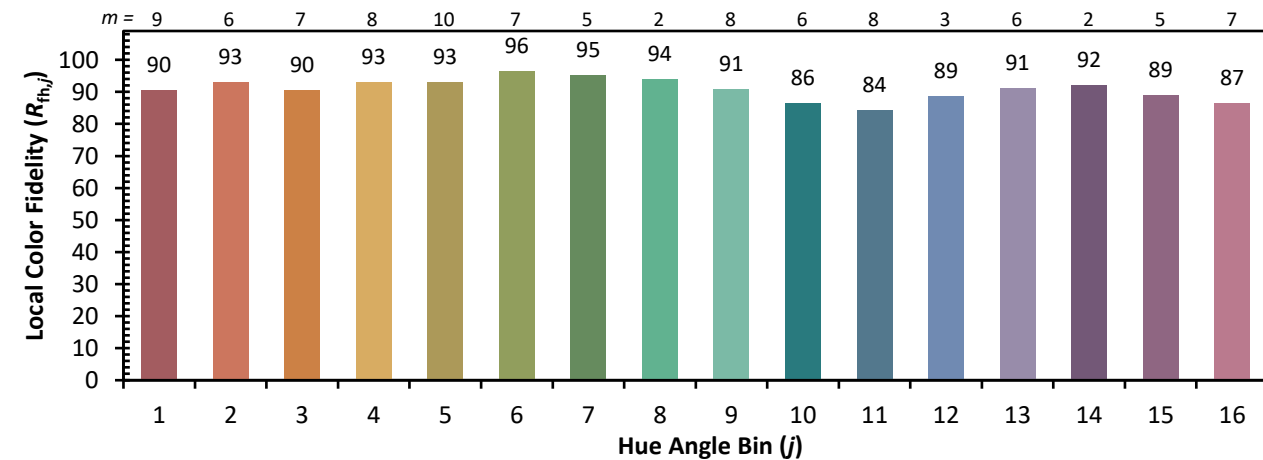
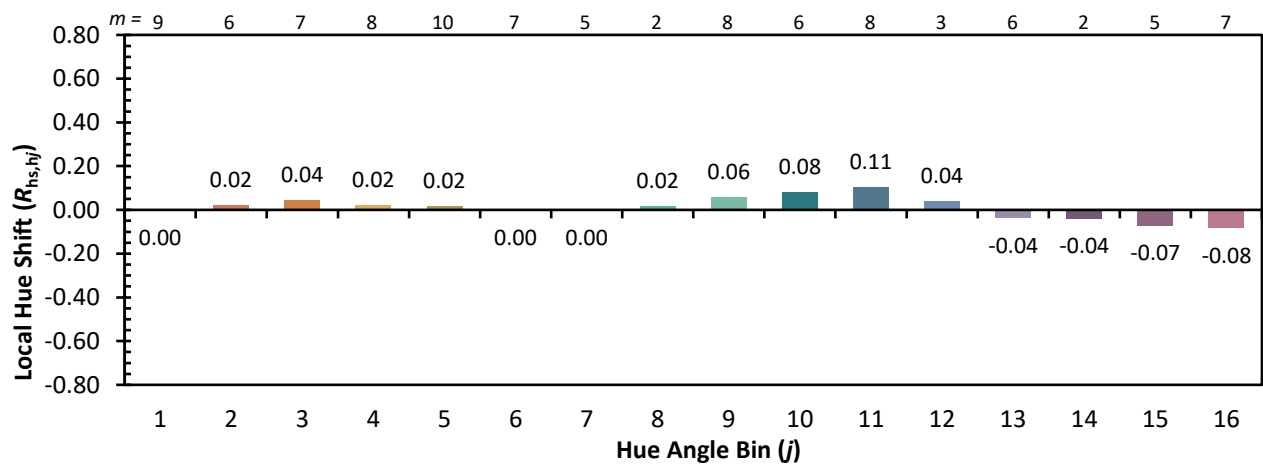
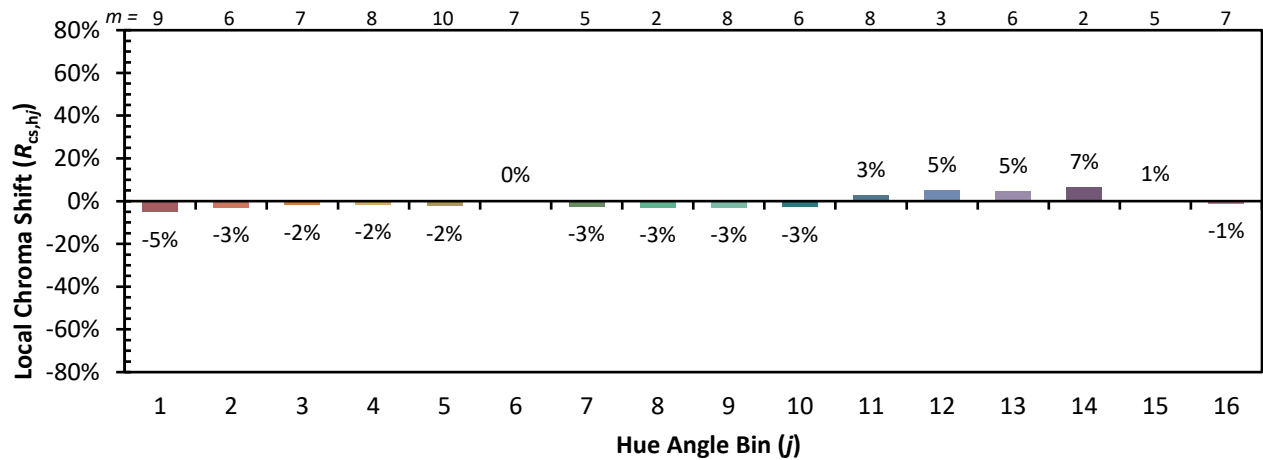


**Individual Sample Fidelity Index ( $R_{f,i}$ )**

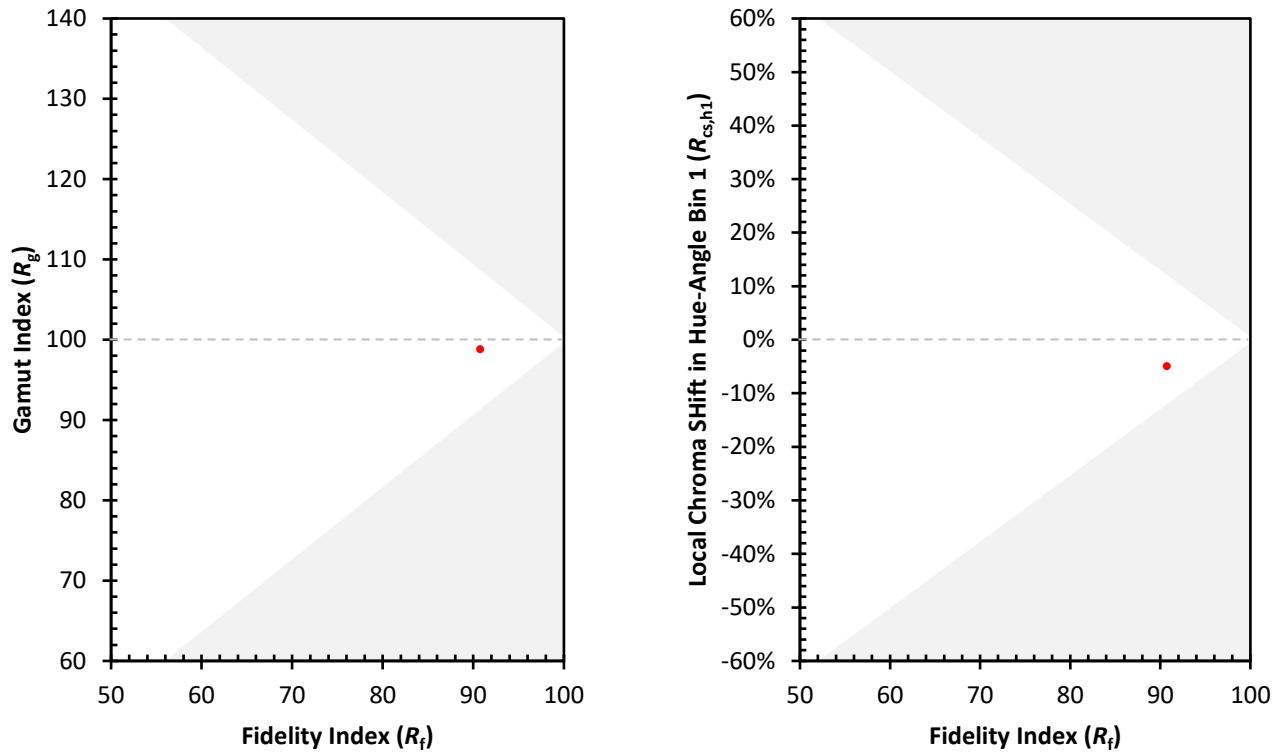
|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 86 | CES26 = 93 | CES51 = 96 | CES76 = 85 |
| CES02 = 62 | CES27 = 90 | CES52 = 98 | CES77 = 88 |
| CES03 = 31 | CES28 = 96 | CES53 = 96 | CES78 = 82 |
| CES04 = 69 | CES29 = 96 | CES54 = 92 | CES79 = 96 |
| CES05 = 49 | CES30 = 90 | CES55 = 90 | CES80 = 93 |
| CES06 = 50 | CES31 = 97 | CES56 = 93 | CES81 = 89 |
| CES07 = 42 | CES32 = 91 | CES57 = 91 | CES82 = 97 |
| CES08 = 41 | CES33 = 98 | CES58 = 92 | CES83 = 98 |
| CES09 = 29 | CES34 = 93 | CES59 = 96 | CES84 = 93 |
| CES10 = 74 | CES35 = 96 | CES60 = 91 | CES85 = 83 |
| CES11 = 57 | CES36 = 79 | CES61 = 91 | CES86 = 88 |
| CES12 = 63 | CES37 = 95 | CES62 = 84 | CES87 = 91 |
| CES13 = 43 | CES38 = 85 | CES63 = 91 | CES88 = 96 |
| CES14 = 74 | CES39 = 99 | CES64 = 87 | CES89 = 87 |
| CES15 = 71 | CES40 = 98 | CES65 = 87 | CES90 = 96 |
| CES16 = 47 | CES41 = 96 | CES66 = 84 | CES91 = 71 |
| CES17 = 49 | CES42 = 95 | CES67 = 83 | CES92 = 79 |
| CES18 = 56 | CES43 = 95 | CES68 = 86 | CES93 = 87 |
| CES19 = 71 | CES44 = 99 | CES69 = 87 | CES94 = 81 |
| CES20 = 66 | CES45 = 98 | CES70 = 84 | CES95 = 82 |
| CES21 = 85 | CES46 = 97 | CES71 = 77 | CES96 = 91 |
| CES22 = 78 | CES47 = 97 | CES72 = 93 | CES97 = 96 |
| CES23 = 91 | CES48 = 90 | CES73 = 78 | CES98 = 94 |
| CES24 = 90 | CES49 = 96 | CES74 = 91 | CES99 = 91 |
| CES25 = 71 | CES50 = 97 | CES75 = 80 |            |



Color Rendition by Hue-Angle Bin



**Measure Comparisons**



(END OF REPORT)