

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: P1214760

Luminaire Tested: 22-ID2-40-CFD1-L950-U

Issue Date: 12/4/2025

**Test Information**

Test Method: LM-79-2019  
Report Number: P1214760  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-2506-458-12)  
Test Lab: INNOVATION CENTER  
Issue Date: 12/4/2025  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: CORELITE  
Catalog Number: 22-ID2-40-CFD1-L950-U  
Description: 2X2 IN DEPTH TROFFER WITH 1INCH CUBE DROP LENS  
Light Source: 5000K CCT, 90 CRI LEDS  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

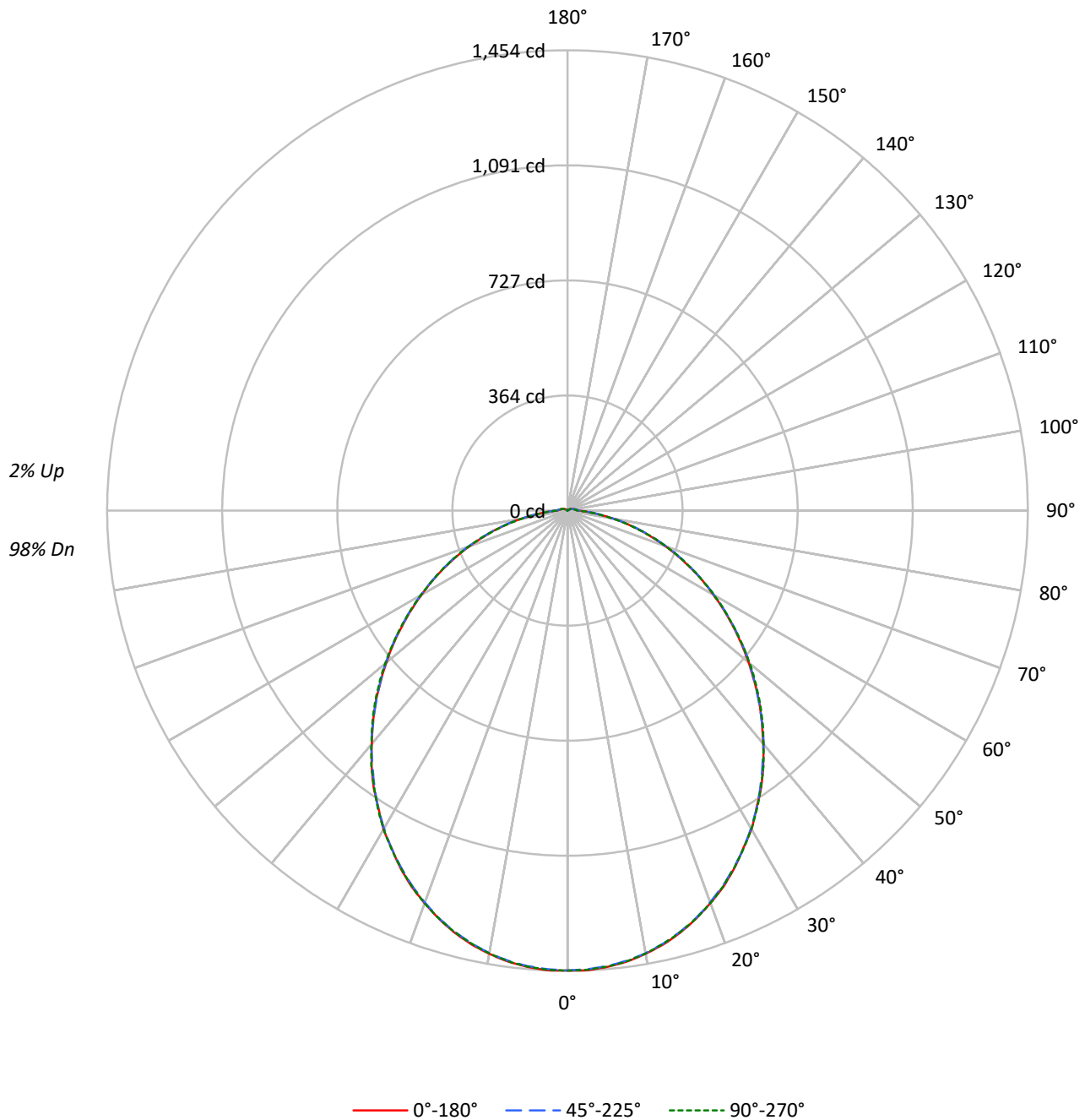
Lumens per Lamp: N/A  
Luminaire Lumens: 3833.0 lumens  
Efficiency: N/A  
Efficacy: 108.9 lumens/watt  
Spacing Criteria (0/90/45): 1.19 / 1.19 / 1.3  
Luminous Opening: Rectangular w/ Sides (W: 2' x L: 2' x H: 0.08')  
CIE Type: Direct

Input Watts (W): 35.2  
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: P1214760  
CATALOG NUMBER: 22-ID2-40-CFD1-L950-U

### Luminous Intensity Polar Plot



TEST NUMBER: P1214760

CATALOG NUMBER: 22-ID2-40-CFD1-L950-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 |  | 98 |
| 1   | 108 | 104 | 99  | 95  | 105 | 101 | 97  | 94  | 97  | 93  | 90  |  | 92  | 90  | 87  |  | 82 |
| 2   | 99  | 91  | 84  | 78  | 96  | 88  | 82  | 77  | 85  | 79  | 75  |  | 81  | 77  | 73  |  | 69 |
| 3   | 90  | 80  | 72  | 65  | 88  | 78  | 71  | 64  | 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  | 55  | 48  | 74  | 62  | 54  | 48  | 60  | 53  | 47  |  | 58  | 51  | 46  |  | 43 |
| 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  | 48  | 39  | 33  | 59  | 47  | 39  | 33  | 45  | 38  | 33  |  | 44  | 37  | 33  |  | 30 |
| 9   | 57  | 44  | 36  | 30  | 55  | 43  | 35  | 30  | 42  | 35  | 30  |  | 41  | 34  | 29  |  | 27 |
| 10  | 53  | 40  | 33  | 27  | 52  | 40  | 32  | 27  | 39  | 32  | 27  |  | 38  | 31  | 27  |  | 25 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 3910 | 3910 | 3910 |
| 5°  | 3895 | 3883 | 3892 |
| 10° | 3858 | 3842 | 3855 |
| 15° | 3804 | 3779 | 3800 |
| 20° | 3725 | 3696 | 3726 |
| 25° | 3635 | 3599 | 3630 |
| 30° | 3530 | 3487 | 3528 |
| 35° | 3411 | 3359 | 3403 |
| 40° | 3269 | 3234 | 3272 |
| 45° | 3134 | 3079 | 3146 |
| 50° | 2983 | 2941 | 3004 |
| 55° | 2835 | 2785 | 2849 |
| 60° | 2679 | 2623 | 2696 |
| 65° | 2516 | 2456 | 2536 |
| 70° | 2332 | 2270 | 2346 |
| 75° | 2130 | 2039 | 2101 |
| 80° | 1843 | 1740 | 1819 |
| 85° | 1602 | 1481 | 1530 |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 90°

Vertical Angle: 45°

Luminance: 3146 cd/sqm

TEST NUMBER: P1214760  
 CATALOG NUMBER: 22-ID2-40-CFD1-L950-U

**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 137.2  | 3.6       |
| 10°-20°   | 388.3  | 10.1      |
| 20°-30°   | 573.2  | 15.0      |
| 30°-40°   | 665.5  | 17.4      |
| 40°-50°   | 661.0  | 17.2      |
| 50°-60°   | 574.1  | 15.0      |
| 60°-70°   | 428.2  | 11.2      |
| 70°-80°   | 250.7  | 6.5       |
| 80°-90°   | 89.6   | 2.3       |
| 90°-100°  | 30.5   | 0.8       |
| 100°-110° | 19.0   | 0.5       |
| 110°-120° | 10.0   | 0.3       |
| 120°-130° | 4.3    | 0.1       |
| 130°-140° | 1.2    | 0.0       |
| 140°-150° | 0.2    | 0.0       |
| 150°-160° | 0.0    | 0.0       |
| 160°-170° | 0.0    | 0.0       |
| 170°-180° | 0.0    | 0.0       |
| 0°-30°    | 1098.7 | 28.7      |
| 0°-40°    | 1764.2 | 46.0      |
| 0°-60°    | 2999.3 | 78.2      |
| 0°-90°    | 3767.8 | 98.3      |
| 90°-120°  | 59.5   | 1.6       |
| 90°-150°  | 65.3   | 1.7       |
| 90°-180°  | 65.0   | 1.7       |
| 0°-180°   | 3833.0 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 1453 | 1453  | 1453 | 1453  | 1453 |      |
| 5°   | 1447 | 1446  | 1444 | 1444  | 1446 | 137  |
| 15°  | 1380 | 1378  | 1377 | 1378  | 1378 | 389  |
| 25°  | 1247 | 1246  | 1244 | 1245  | 1246 | 574  |
| 35°  | 1067 | 1064  | 1063 | 1064  | 1065 | 666  |
| 45°  | 856  | 857   | 855  | 858   | 860  | 660  |
| 55°  | 639  | 642   | 642  | 642   | 642  | 572  |
| 65°  | 429  | 433   | 432  | 432   | 432  | 426  |
| 75°  | 236  | 237   | 238  | 237   | 232  | 248  |
| 85°  | 76   | 78    | 79   | 77    | 72   | 76   |
| 90°  | 32   | 35    | 36   | 35    | 31   | 20   |
| 95°  | 27   | 28    | 29   | 28    | 26   | 21   |
| 105° | 18   | 18    | 18   | 17    | 18   | 19   |
| 115° | 11   | 10    | 10   | 9     | 11   | 11   |
| 125° | 6    | 5     | 3    | 5     | 6    | 5    |
| 135° | 2    | 1     | 0    | 1     | 2    | 2    |
| 145° | 0    | 0     | 0    | 0     | 0    | 0    |
| 155° | 0    | 0     | 0    | 0     | 0    | 0    |
| 165° | 0    | 0     | 0    | 0     | 0    | 0    |
| 175° | 0    | 0     | 0    | 0     | 0    | 0    |
| 180° | 0    | 0     | 0    | 0     | 0    | 0    |

TEST NUMBER: P1214760

CATALOG NUMBER: 22-ID2-40-CFD1-L950-U

**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 1453.1 | 1453.1 | 1453.1 | 1453.1 | 1453.1 |
| 2.5°   | 1453.6 | 1451.7 | 1450.2 | 1450.2 | 1451.7 |
| 5°     | 1446.9 | 1445.9 | 1444.5 | 1444.0 | 1445.9 |
| 7.5°   | 1437.2 | 1435.8 | 1434.3 | 1434.3 | 1436.3 |
| 10°    | 1421.8 | 1420.9 | 1419.9 | 1420.4 | 1420.9 |
| 12.5°  | 1403.5 | 1401.6 | 1400.6 | 1400.6 | 1401.1 |
| 15°    | 1379.9 | 1378.5 | 1377.0 | 1377.5 | 1378.5 |
| 17.5°  | 1352.0 | 1351.5 | 1350.1 | 1350.5 | 1351.0 |
| 20°    | 1319.7 | 1318.7 | 1317.3 | 1318.3 | 1320.2 |
| 22.5°  | 1286.5 | 1283.6 | 1282.6 | 1283.1 | 1284.5 |
| 25°    | 1247.0 | 1246.0 | 1244.1 | 1245.1 | 1245.5 |
| 27.5°  | 1202.7 | 1206.0 | 1203.6 | 1203.1 | 1204.1 |
| 30°    | 1162.2 | 1159.3 | 1158.8 | 1158.8 | 1161.7 |
| 32.5°  | 1112.1 | 1112.1 | 1112.6 | 1113.1 | 1115.0 |
| 35°    | 1067.3 | 1064.0 | 1063.0 | 1064.4 | 1064.9 |
| 37.5°  | 1015.8 | 1015.3 | 1011.9 | 1014.8 | 1017.2 |
| 40°    | 961.8  | 961.4  | 964.3  | 962.3  | 962.8  |
| 42.5°  | 908.9  | 909.3  | 908.9  | 911.3  | 912.7  |
| 45°    | 856.4  | 856.8  | 854.9  | 857.8  | 859.7  |
| 47.5°  | 801.0  | 802.9  | 801.9  | 802.9  | 805.8  |
| 50°    | 746.5  | 749.0  | 749.9  | 749.9  | 751.8  |
| 52.5°  | 693.1  | 695.0  | 696.5  | 696.9  | 696.5  |
| 55°    | 638.7  | 641.6  | 641.6  | 642.5  | 642.0  |
| 57.5°  | 585.7  | 589.1  | 588.6  | 589.1  | 588.1  |
| 60°    | 532.2  | 534.6  | 535.1  | 536.1  | 535.6  |
| 62.5°  | 482.1  | 483.1  | 483.6  | 483.6  | 481.6  |
| 65°    | 429.1  | 433.0  | 432.5  | 432.0  | 432.5  |
| 67.5°  | 379.1  | 381.5  | 383.4  | 381.9  | 381.5  |
| 70°    | 329.0  | 333.3  | 333.3  | 332.8  | 330.9  |
| 72.5°  | 279.8  | 283.7  | 283.7  | 283.7  | 283.2  |
| 75°    | 235.5  | 237.0  | 237.5  | 237.0  | 232.2  |
| 77.5°  | 189.3  | 190.7  | 192.7  | 192.2  | 188.3  |
| 80°    | 145.9  | 148.8  | 148.3  | 147.9  | 144.0  |
| 82.5°  | 106.9  | 110.3  | 111.3  | 109.8  | 106.9  |
| 85°    | 75.6   | 78.0   | 79.0   | 76.6   | 72.2   |
| 87.5°  | 50.1   | 52.5   | 53.0   | 52.0   | 49.1   |
| 90°    | 32.3   | 34.7   | 35.6   | 34.7   | 31.3   |
| 92.5°  | 29.4   | 30.8   | 31.8   | 30.8   | 28.4   |
| 95°    | 27.0   | 27.9   | 28.9   | 27.9   | 26.5   |
| 97.5°  | 24.6   | 25.0   | 26.0   | 25.0   | 24.1   |
| 100°   | 22.6   | 22.2   | 23.1   | 22.2   | 22.2   |
| 102.5° | 20.2   | 19.7   | 20.7   | 19.7   | 20.2   |
| 105°   | 18.3   | 17.8   | 18.3   | 17.3   | 17.8   |
| 107.5° | 16.4   | 15.4   | 15.9   | 14.9   | 16.4   |
| 110°   | 14.4   | 13.5   | 13.5   | 12.5   | 14.4   |

TEST NUMBER: P1214760

CATALOG NUMBER: 22-ID2-40-CFD1-L950-U

**CANDELA DISTRIBUTION (continued):**

|        | 0°   | 22.5° | 45°  | 67.5° | 90°  |
|--------|------|-------|------|-------|------|
| 112.5° | 13.0 | 11.6  | 11.6 | 11.1  | 12.5 |
| 115°   | 11.1 | 9.6   | 9.6  | 9.2   | 11.1 |
| 117.5° | 9.6  | 8.2   | 7.7  | 8.2   | 9.6  |
| 120°   | 8.2  | 6.7   | 6.3  | 6.7   | 8.2  |
| 122.5° | 7.2  | 5.8   | 4.8  | 5.8   | 7.2  |
| 125°   | 5.8  | 4.8   | 3.4  | 4.8   | 5.8  |
| 127.5° | 4.8  | 3.4   | 1.9  | 3.9   | 4.8  |
| 130°   | 3.9  | 2.9   | 1.4  | 3.4   | 3.9  |
| 132.5° | 2.9  | 1.9   | 0.5  | 2.4   | 3.4  |
| 135°   | 1.9  | 1.4   | 0.5  | 1.4   | 2.4  |
| 137.5° | 1.4  | 1.0   | 0.5  | 1.0   | 1.9  |
| 140°   | 1.0  | 0.5   | 0.5  | 0.5   | 1.0  |
| 142.5° | 0.5  | 0.5   | 0.5  | 0.5   | 0.5  |
| 145°   | 0.5  | 0.5   | 0.5  | 0.5   | 0.5  |
| 147.5° | 0.0  | 0.0   | 0.0  | 0.0   | 0.0  |
| 150°   | 0.0  | 0.0   | 0.0  | 0.0   | 0.0  |
| 152.5° | 0.0  | 0.0   | 0.0  | 0.0   | 0.0  |
| 155°   | 0.0  | 0.0   | 0.0  | 0.0   | 0.0  |
| 157.5° | 0.0  | 0.0   | 0.0  | 0.0   | 0.0  |
| 160°   | 0.0  | 0.0   | 0.0  | 0.0   | 0.0  |
| 162.5° | 0.0  | 0.0   | 0.0  | 0.0   | 0.0  |
| 165°   | 0.0  | 0.0   | 0.0  | 0.0   | 0.0  |
| 167.5° | 0.0  | 0.0   | 0.0  | 0.0   | 0.0  |
| 170°   | 0.0  | 0.0   | 0.0  | 0.0   | 0.0  |
| 172.5° | 0.0  | 0.0   | 0.0  | 0.0   | 0.0  |
| 175°   | 0.0  | 0.0   | 0.0  | 0.0   | 0.0  |
| 177.5° | 0.0  | 0.0   | 0.0  | 0.0   | 0.0  |
| 180°   | 0.0  | 0.0   | 0.0  | 0.0   | 0.0  |

TEST NUMBER: P1214760

CATALOG NUMBER: 22-ID2-40-CFD1-L950-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 | 15.37            | 16.94 | 15.76 | 17.29 | 17.65 | 15.37          | 16.95 | 15.77 | 17.30 | 17.66 |
|                 | 3H   | 17.08            | 18.50 | 17.48 | 18.86 | 19.27 | 17.09          | 18.51 | 17.49 | 18.88 | 19.28 |
|                 | 4H   | 17.72            | 19.06 | 18.14 | 19.44 | 19.86 | 17.72          | 19.07 | 18.15 | 19.45 | 19.87 |
|                 | 6H   | 18.19            | 19.43 | 18.63 | 19.83 | 20.27 | 18.19          | 19.43 | 18.63 | 19.83 | 20.27 |
|                 | 8H   | 18.35            | 19.53 | 18.80 | 19.96 | 20.40 | 18.34          | 19.53 | 18.80 | 19.96 | 20.40 |
|                 | 12H  | 18.46            | 19.60 | 18.92 | 20.02 | 20.49 | 18.46          | 19.59 | 18.91 | 20.01 | 20.48 |
| 4H              | 2H   | 15.95            | 17.30 | 16.38 | 17.68 | 18.10 | 15.96          | 17.30 | 16.38 | 17.68 | 18.10 |
|                 | 3H   | 17.88            | 19.01 | 18.32 | 19.44 | 19.88 | 17.89          | 19.02 | 18.33 | 19.45 | 19.89 |
|                 | 4H   | 18.65            | 19.67 | 19.11 | 20.12 | 20.60 | 18.66          | 19.68 | 19.12 | 20.12 | 20.60 |
|                 | 6H   | 19.25            | 20.14 | 19.73 | 20.62 | 21.11 | 19.25          | 20.14 | 19.73 | 20.62 | 21.11 |
|                 | 8H   | 19.46            | 20.29 | 19.94 | 20.77 | 21.27 | 19.45          | 20.29 | 19.94 | 20.76 | 21.27 |
|                 | 12H  | 19.62            | 20.37 | 20.13 | 20.88 | 21.39 | 19.61          | 20.36 | 20.12 | 20.87 | 21.38 |
| 8H              | 4H   | 18.94            | 19.78 | 19.43 | 20.25 | 20.76 | 18.95          | 19.78 | 19.44 | 20.26 | 20.76 |
|                 | 6H   | 19.66            | 20.36 | 20.18 | 20.88 | 21.39 | 19.66          | 20.36 | 20.18 | 20.88 | 21.39 |
|                 | 8H   | 19.94            | 20.57 | 20.48 | 21.10 | 21.63 | 19.94          | 20.56 | 20.47 | 21.10 | 21.63 |
|                 | 12H  | 20.19            | 20.75 | 20.73 | 21.27 | 21.87 | 20.18          | 20.73 | 20.71 | 21.25 | 21.85 |
| 12H             | 4H   | 18.97            | 19.72 | 19.48 | 20.23 | 20.74 | 18.98          | 19.73 | 19.48 | 20.24 | 20.74 |
|                 | 6H   | 19.71            | 20.34 | 20.25 | 20.88 | 21.40 | 19.71          | 20.34 | 20.25 | 20.88 | 21.40 |
|                 | 8H   | 20.05            | 20.61 | 20.59 | 21.13 | 21.73 | 20.05          | 20.61 | 20.58 | 21.13 | 21.72 |



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

Report Prepared for

Cooper Lighting Solutions

Corelite

Report Number: SP1-2506-458-13

Test Date: 08/27/2025

Luminaire Tested: 22ID2-55-CFR1-L950-U

Data in this report applies to families of products including 22ID2-55-CFR1-L950-U

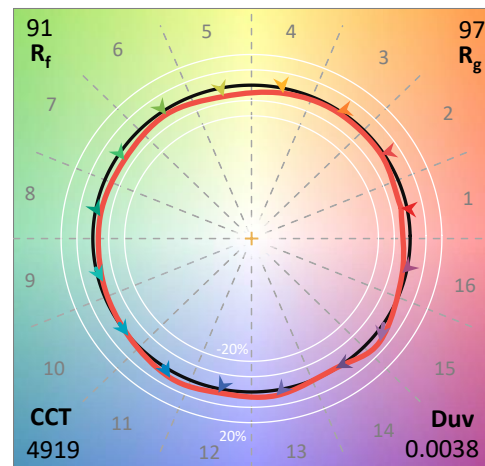
### Test Information

Test Method: LM-79-2019  
 Report Number: SP1-2506-458-13  
 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-L950-U**  
 Description: 2X2 CGTX WITH INDEPTH FRAME AND CFR1 LENS - 5500 LUMEN 5000K 90CRI

### Spectral Parameters

CCT (K): 4919  
 CIE  $u'$ : 0.2096  
 CIE  $v'$ : 0.4901  
 Duv: 0.0038  
 CIE x: 0.3483  
 CIE y: 0.3619  
 CIE z: 0.2898  
 Peak Wavelength (nm): 453  
 Dominant Wavelength (nm): 570  
 Purity: 13.10873  
 R<sub>f</sub>: 90.8  
 R<sub>g</sub>: 97.4

CRI (Ra): 94.0  
 R1: 94.8  
 R2: 97.7  
 R3: 98.4  
 R4: 90.8  
 R5: 92.2  
 R6: 94.3  
 R7: 94.0  
 R8: 90.0  
 R9: 77.7  
 R10: 93.1  
 R11: 92.0  
 R12: 65.9  
 R13: 95.9  
 R14: 99.0  
 R15: 91.4



### Test Conditions

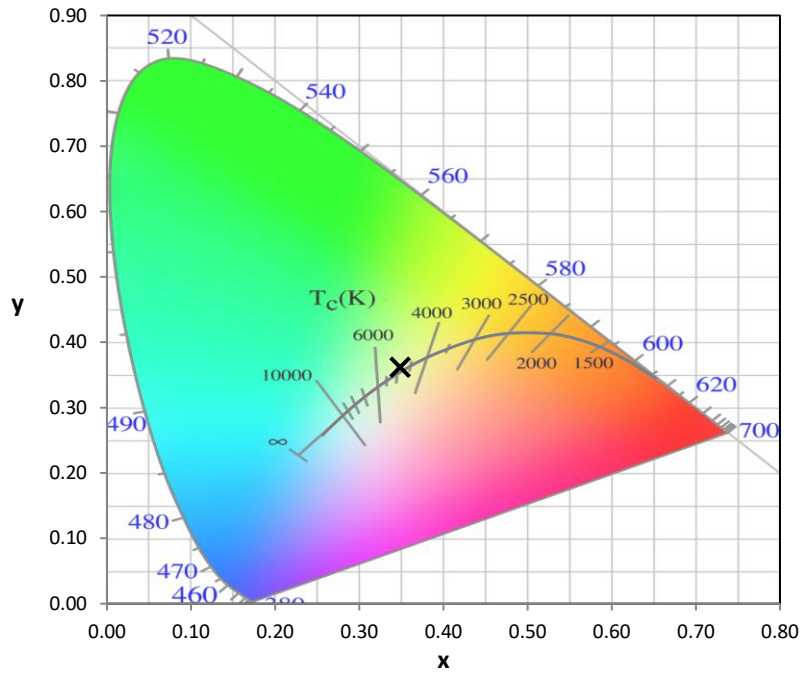
Stabilization Time: M  
 Operation Time: 1H 0M  
 Sphere Temperature (°C): 25.0

REPORT NUMBER: SP1-2506-458-13

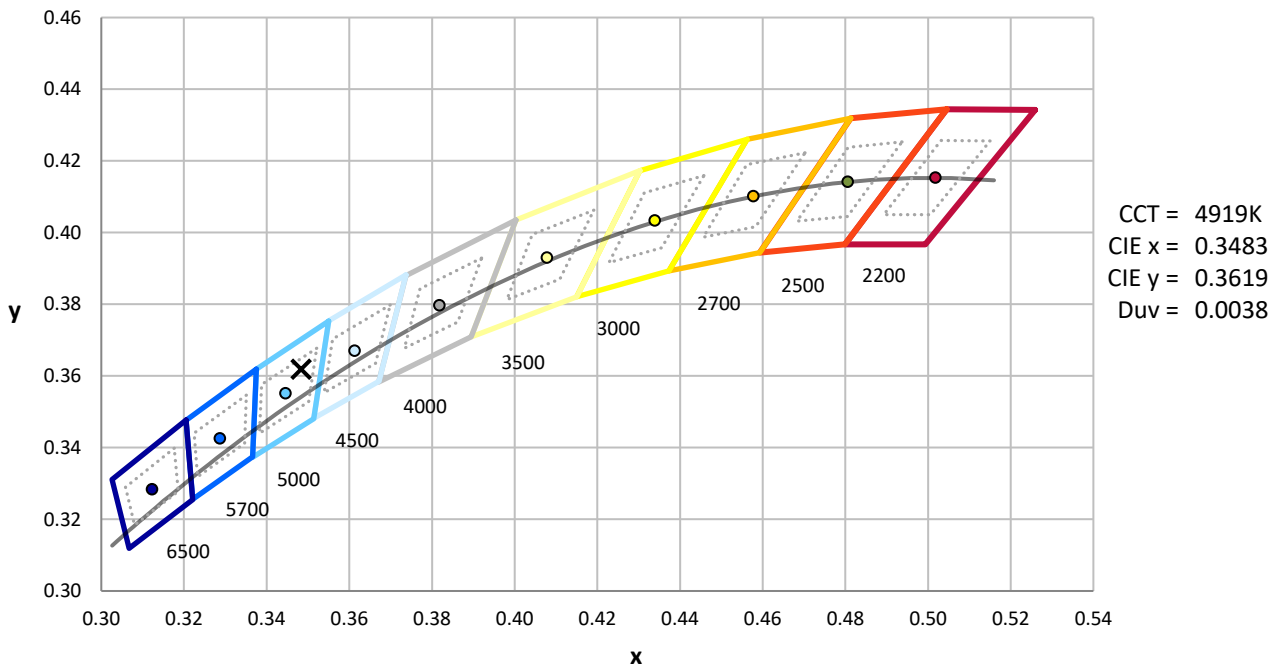
| Measurement and Test Equipment |                       |                  |                      |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument                     | Identification Number | Calibration Date | Calibration Due Date |
| 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: SP1-2506-458-13

**CIE 1931 Chromaticity Diagram**



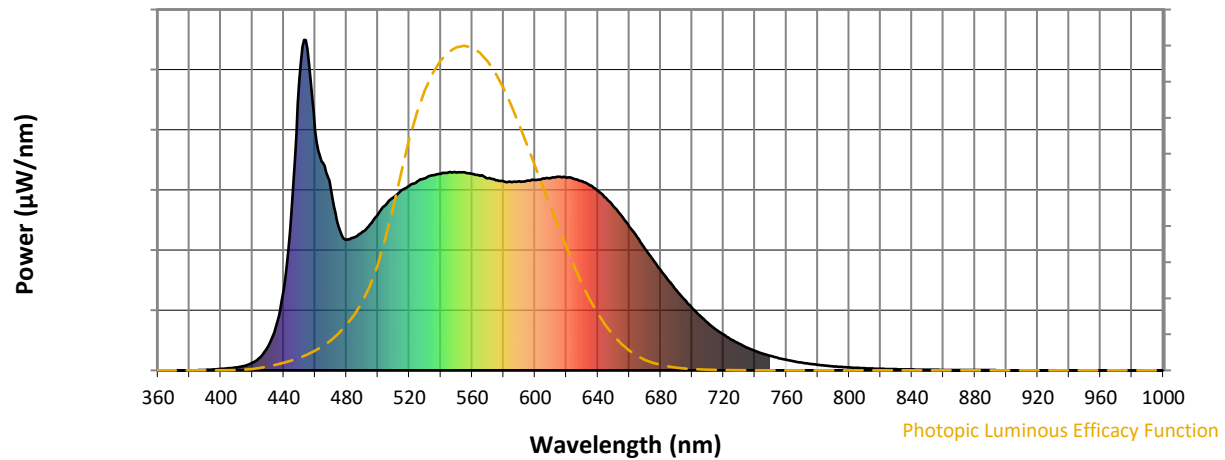
**CIE 1931 Chromaticity Diagram with 2017 ANSI 7-Step and 4-Step Quadrangles**



Point lies inside the ANSI 5000K 4-step quadrangle

REPORT NUMBER: SP1-2506-458-13

### Photopic Flux vs. Wavelength

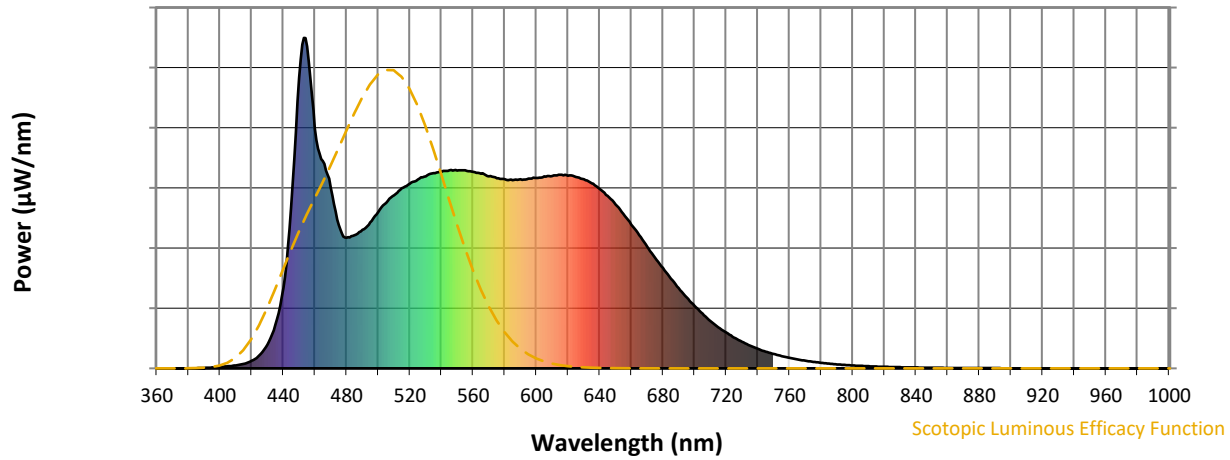


### Photopic Lumens: NR

| $\lambda$<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               | 419                                  | NR                             | 620               | 583                                  | NR                             | 750               | 44                                   | NR                             | 880               | 1                                    | NR                             |
| 365               | 0                                    | NR                             | 495               | 441                                  | NR                             | 625               | 580                                  | NR                             | 755               | 37                                   | NR                             | 885               | 1                                    | NR                             |
| 370               | 0                                    | NR                             | 500               | 472                                  | NR                             | 630               | 572                                  | NR                             | 760               | 32                                   | NR                             | 890               | 1                                    | NR                             |
| 375               | 0                                    | NR                             | 505               | 501                                  | NR                             | 635               | 559                                  | NR                             | 765               | 27                                   | NR                             | 895               | 0                                    | NR                             |
| 380               | 0                                    | NR                             | 510               | 524                                  | NR                             | 640               | 543                                  | NR                             | 770               | 23                                   | NR                             | 900               | 0                                    | NR                             |
| 385               | 0                                    | NR                             | 515               | 545                                  | NR                             | 645               | 522                                  | NR                             | 775               | 20                                   | NR                             | 905               | 0                                    | NR                             |
| 390               | 1                                    | NR                             | 520               | 559                                  | NR                             | 650               | 496                                  | NR                             | 780               | 17                                   | NR                             | 910               | 0                                    | NR                             |
| 395               | 3                                    | NR                             | 525               | 572                                  | NR                             | 655               | 468                                  | NR                             | 785               | 14                                   | NR                             | 915               | 0                                    | NR                             |
| 400               | 4                                    | NR                             | 530               | 581                                  | NR                             | 660               | 435                                  | NR                             | 790               | 12                                   | NR                             | 920               | 0                                    | NR                             |
| 405               | 7                                    | NR                             | 535               | 590                                  | NR                             | 665               | 403                                  | NR                             | 795               | 10                                   | NR                             | 925               | 0                                    | NR                             |
| 410               | 9                                    | NR                             | 540               | 595                                  | NR                             | 670               | 368                                  | NR                             | 800               | 9                                    | NR                             | 930               | 0                                    | NR                             |
| 415               | 14                                   | NR                             | 545               | 599                                  | NR                             | 675               | 335                                  | NR                             | 805               | 8                                    | NR                             | 935               | 0                                    | NR                             |
| 420               | 23                                   | NR                             | 550               | 599                                  | NR                             | 680               | 304                                  | NR                             | 810               | 6                                    | NR                             | 940               | 0                                    | NR                             |
| 425               | 40                                   | NR                             | 555               | 599                                  | NR                             | 685               | 271                                  | NR                             | 815               | 6                                    | NR                             | 945               | 0                                    | NR                             |
| 430               | 72                                   | NR                             | 560               | 595                                  | NR                             | 690               | 243                                  | NR                             | 820               | 5                                    | NR                             | 950               | 0                                    | NR                             |
| 435               | 132                                  | NR                             | 565               | 589                                  | NR                             | 695               | 215                                  | NR                             | 825               | 4                                    | NR                             | 955               | 0                                    | NR                             |
| 440               | 243                                  | NR                             | 570               | 581                                  | NR                             | 700               | 189                                  | NR                             | 830               | 3                                    | NR                             | 960               | 0                                    | NR                             |
| 445               | 488                                  | NR                             | 575               | 575                                  | NR                             | 705               | 165                                  | NR                             | 835               | 3                                    | NR                             | 965               | 0                                    | NR                             |
| 450               | 879                                  | NR                             | 580               | 573                                  | NR                             | 710               | 144                                  | NR                             | 840               | 3                                    | NR                             | 970               | 0                                    | NR                             |
| 455               | 974                                  | NR                             | 585               | 570                                  | NR                             | 715               | 124                                  | NR                             | 845               | 2                                    | NR                             | 975               | 0                                    | NR                             |
| 460               | 726                                  | NR                             | 590               | 572                                  | NR                             | 720               | 108                                  | NR                             | 850               | 2                                    | NR                             | 980               | 0                                    | NR                             |
| 465               | 627                                  | NR                             | 595               | 574                                  | NR                             | 725               | 93                                   | NR                             | 855               | 2                                    | NR                             | 985               | 0                                    | NR                             |
| 470               | 546                                  | NR                             | 600               | 576                                  | NR                             | 730               | 80                                   | NR                             | 860               | 1                                    | NR                             | 990               | 0                                    | NR                             |
| 475               | 434                                  | NR                             | 605               | 581                                  | NR                             | 735               | 69                                   | NR                             | 865               | 1                                    | NR                             | 995               | 0                                    | NR                             |
| 480               | 395                                  | NR                             | 610               | 582                                  | NR                             | 740               | 59                                   | NR                             | 870               | 1                                    | NR                             | 1000              | 0                                    | NR                             |
| 485               | 403                                  | NR                             | 615               | 586                                  | NR                             | 745               | 51                                   | NR                             | 875               | 1                                    | NR                             |                   |                                      |                                |

REPORT NUMBER: SP1-2506-458-13

### Scotopic Flux vs. Wavelength



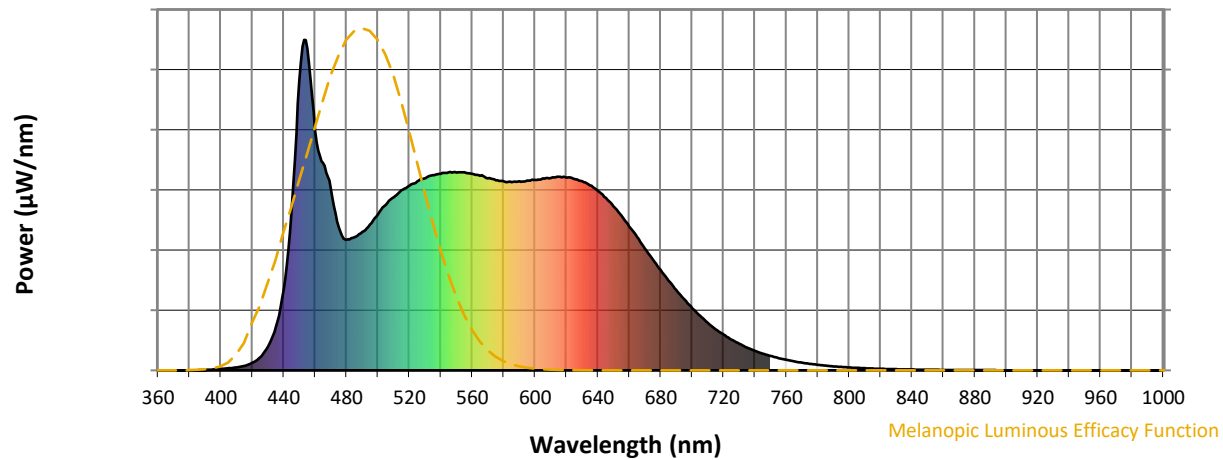
Scotopic Lumens: NR

S/P: 2.09

| 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       | 419                         | NR               | 620       | 583                         | NR               | 750       | 44                          | NR               | 880       | 1                           | NR               |
| 365       | 0                           | NR               | 495       | 441                         | NR               | 625       | 580                         | NR               | 755       | 37                          | NR               | 885       | 1                           | NR               |
| 370       | 0                           | NR               | 500       | 472                         | NR               | 630       | 572                         | NR               | 760       | 32                          | NR               | 890       | 1                           | NR               |
| 375       | 0                           | NR               | 505       | 501                         | NR               | 635       | 559                         | NR               | 765       | 27                          | NR               | 895       | 0                           | NR               |
| 380       | 0                           | NR               | 510       | 524                         | NR               | 640       | 543                         | NR               | 770       | 23                          | NR               | 900       | 0                           | NR               |
| 385       | 0                           | NR               | 515       | 545                         | NR               | 645       | 522                         | NR               | 775       | 20                          | NR               | 905       | 0                           | NR               |
| 390       | 1                           | NR               | 520       | 559                         | NR               | 650       | 496                         | NR               | 780       | 17                          | NR               | 910       | 0                           | NR               |
| 395       | 3                           | NR               | 525       | 572                         | NR               | 655       | 468                         | NR               | 785       | 14                          | NR               | 915       | 0                           | NR               |
| 400       | 4                           | NR               | 530       | 581                         | NR               | 660       | 435                         | NR               | 790       | 12                          | NR               | 920       | 0                           | NR               |
| 405       | 7                           | NR               | 535       | 590                         | NR               | 665       | 403                         | NR               | 795       | 10                          | NR               | 925       | 0                           | NR               |
| 410       | 9                           | NR               | 540       | 595                         | NR               | 670       | 368                         | NR               | 800       | 9                           | NR               | 930       | 0                           | NR               |
| 415       | 14                          | NR               | 545       | 599                         | NR               | 675       | 335                         | NR               | 805       | 8                           | NR               | 935       | 0                           | NR               |
| 420       | 23                          | NR               | 550       | 599                         | NR               | 680       | 304                         | NR               | 810       | 6                           | NR               | 940       | 0                           | NR               |
| 425       | 40                          | NR               | 555       | 599                         | NR               | 685       | 271                         | NR               | 815       | 6                           | NR               | 945       | 0                           | NR               |
| 430       | 72                          | NR               | 560       | 595                         | NR               | 690       | 243                         | NR               | 820       | 5                           | NR               | 950       | 0                           | NR               |
| 435       | 132                         | NR               | 565       | 589                         | NR               | 695       | 215                         | NR               | 825       | 4                           | NR               | 955       | 0                           | NR               |
| 440       | 243                         | NR               | 570       | 581                         | NR               | 700       | 189                         | NR               | 830       | 3                           | NR               | 960       | 0                           | NR               |
| 445       | 488                         | NR               | 575       | 575                         | NR               | 705       | 165                         | NR               | 835       | 3                           | NR               | 965       | 0                           | NR               |
| 450       | 879                         | NR               | 580       | 573                         | NR               | 710       | 144                         | NR               | 840       | 3                           | NR               | 970       | 0                           | NR               |
| 455       | 974                         | NR               | 585       | 570                         | NR               | 715       | 124                         | NR               | 845       | 2                           | NR               | 975       | 0                           | NR               |
| 460       | 726                         | NR               | 590       | 572                         | NR               | 720       | 108                         | NR               | 850       | 2                           | NR               | 980       | 0                           | NR               |
| 465       | 627                         | NR               | 595       | 574                         | NR               | 725       | 93                          | NR               | 855       | 2                           | NR               | 985       | 0                           | NR               |
| 470       | 546                         | NR               | 600       | 576                         | NR               | 730       | 80                          | NR               | 860       | 1                           | NR               | 990       | 0                           | NR               |
| 475       | 434                         | NR               | 605       | 581                         | NR               | 735       | 69                          | NR               | 865       | 1                           | NR               | 995       | 0                           | NR               |
| 480       | 395                         | NR               | 610       | 582                         | NR               | 740       | 59                          | NR               | 870       | 1                           | NR               | 1000      | 0                           | NR               |
| 485       | 403                         | NR               | 615       | 586                         | NR               | 745       | 51                          | NR               | 875       | 1                           | NR               |           |                             |                  |

REPORT NUMBER: SP1-2506-458-13

### Melanopic Flux vs. Wavelength



Melanopic Lumens: NR

M/P: 4.55

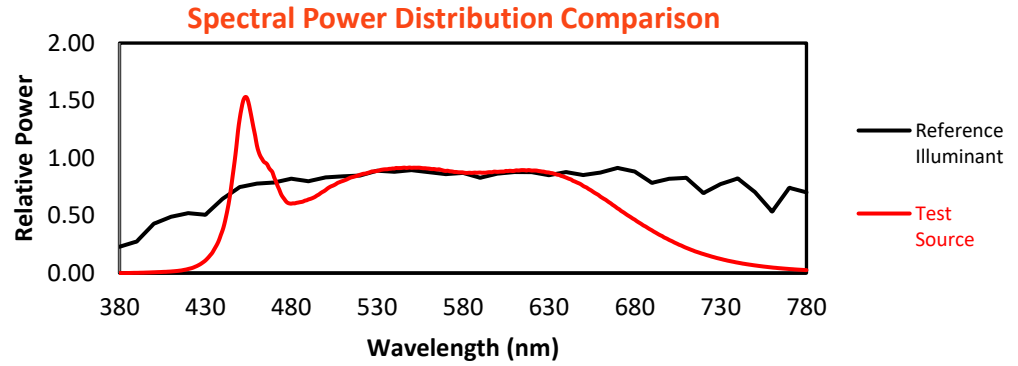
| λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) |
|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|
| 360    | 0                        | NR            | 490    | 419                      | NR            | 620    | 583                      | NR            | 750    | 44                       | NR            | 880    | 1                        | NR            |
| 365    | 0                        | NR            | 495    | 441                      | NR            | 625    | 580                      | NR            | 755    | 37                       | NR            | 885    | 1                        | NR            |
| 370    | 0                        | NR            | 500    | 472                      | NR            | 630    | 572                      | NR            | 760    | 32                       | NR            | 890    | 1                        | NR            |
| 375    | 0                        | NR            | 505    | 501                      | NR            | 635    | 559                      | NR            | 765    | 27                       | NR            | 895    | 0                        | NR            |
| 380    | 0                        | NR            | 510    | 524                      | NR            | 640    | 543                      | NR            | 770    | 23                       | NR            | 900    | 0                        | NR            |
| 385    | 0                        | NR            | 515    | 545                      | NR            | 645    | 522                      | NR            | 775    | 20                       | NR            | 905    | 0                        | NR            |
| 390    | 1                        | NR            | 520    | 559                      | NR            | 650    | 496                      | NR            | 780    | 17                       | NR            | 910    | 0                        | NR            |
| 395    | 3                        | NR            | 525    | 572                      | NR            | 655    | 468                      | NR            | 785    | 14                       | NR            | 915    | 0                        | NR            |
| 400    | 4                        | NR            | 530    | 581                      | NR            | 660    | 435                      | NR            | 790    | 12                       | NR            | 920    | 0                        | NR            |
| 405    | 7                        | NR            | 535    | 590                      | NR            | 665    | 403                      | NR            | 795    | 10                       | NR            | 925    | 0                        | NR            |
| 410    | 9                        | NR            | 540    | 595                      | NR            | 670    | 368                      | NR            | 800    | 9                        | NR            | 930    | 0                        | NR            |
| 415    | 14                       | NR            | 545    | 599                      | NR            | 675    | 335                      | NR            | 805    | 8                        | NR            | 935    | 0                        | NR            |
| 420    | 23                       | NR            | 550    | 599                      | NR            | 680    | 304                      | NR            | 810    | 6                        | NR            | 940    | 0                        | NR            |
| 425    | 40                       | NR            | 555    | 599                      | NR            | 685    | 271                      | NR            | 815    | 6                        | NR            | 945    | 0                        | NR            |
| 430    | 72                       | NR            | 560    | 595                      | NR            | 690    | 243                      | NR            | 820    | 5                        | NR            | 950    | 0                        | NR            |
| 435    | 132                      | NR            | 565    | 589                      | NR            | 695    | 215                      | NR            | 825    | 4                        | NR            | 955    | 0                        | NR            |
| 440    | 243                      | NR            | 570    | 581                      | NR            | 700    | 189                      | NR            | 830    | 3                        | NR            | 960    | 0                        | NR            |
| 445    | 488                      | NR            | 575    | 575                      | NR            | 705    | 165                      | NR            | 835    | 3                        | NR            | 965    | 0                        | NR            |
| 450    | 879                      | NR            | 580    | 573                      | NR            | 710    | 144                      | NR            | 840    | 3                        | NR            | 970    | 0                        | NR            |
| 455    | 974                      | NR            | 585    | 570                      | NR            | 715    | 124                      | NR            | 845    | 2                        | NR            | 975    | 0                        | NR            |
| 460    | 726                      | NR            | 590    | 572                      | NR            | 720    | 108                      | NR            | 850    | 2                        | NR            | 980    | 0                        | NR            |
| 465    | 627                      | NR            | 595    | 574                      | NR            | 725    | 93                       | NR            | 855    | 2                        | NR            | 985    | 0                        | NR            |
| 470    | 546                      | NR            | 600    | 576                      | NR            | 730    | 80                       | NR            | 860    | 1                        | NR            | 990    | 0                        | NR            |
| 475    | 434                      | NR            | 605    | 581                      | NR            | 735    | 69                       | NR            | 865    | 1                        | NR            | 995    | 0                        | NR            |
| 480    | 395                      | NR            | 610    | 582                      | NR            | 740    | 59                       | NR            | 870    | 1                        | NR            | 1000   | 0                        | NR            |
| 485    | 403                      | NR            | 615    | 586                      | NR            | 745    | 51                       | NR            | 875    | 1                        | NR            |        |                          |               |

REPORT NUMBER: SP1-2506-458-13

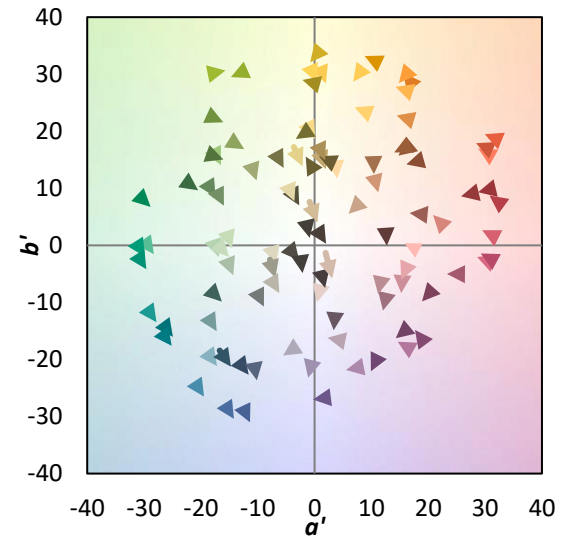
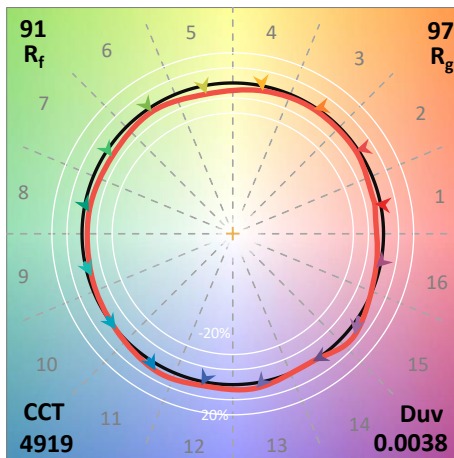
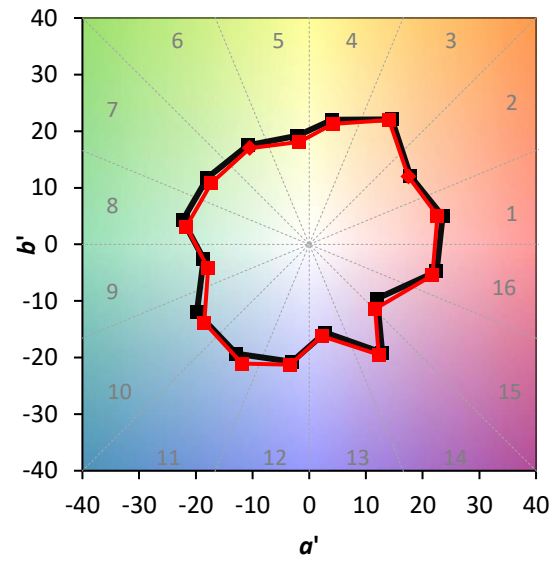
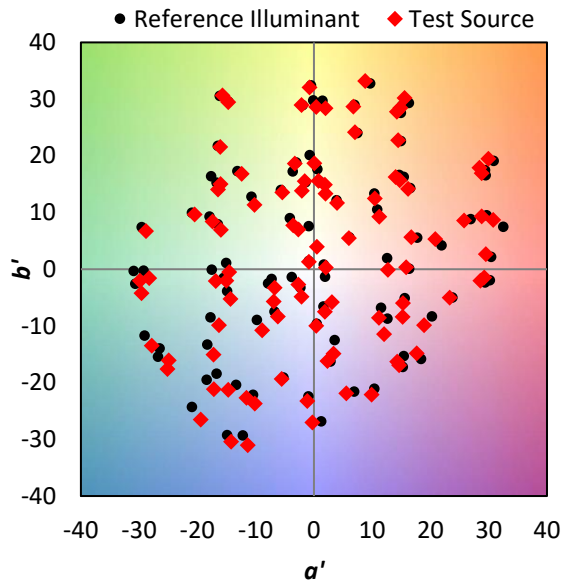
TM-30-18

### Summary

$R_f = 90.8$   
 $R_g = 97.4$   
 $CIE R_a = 94.0$   
 $R_9 = 77.7$



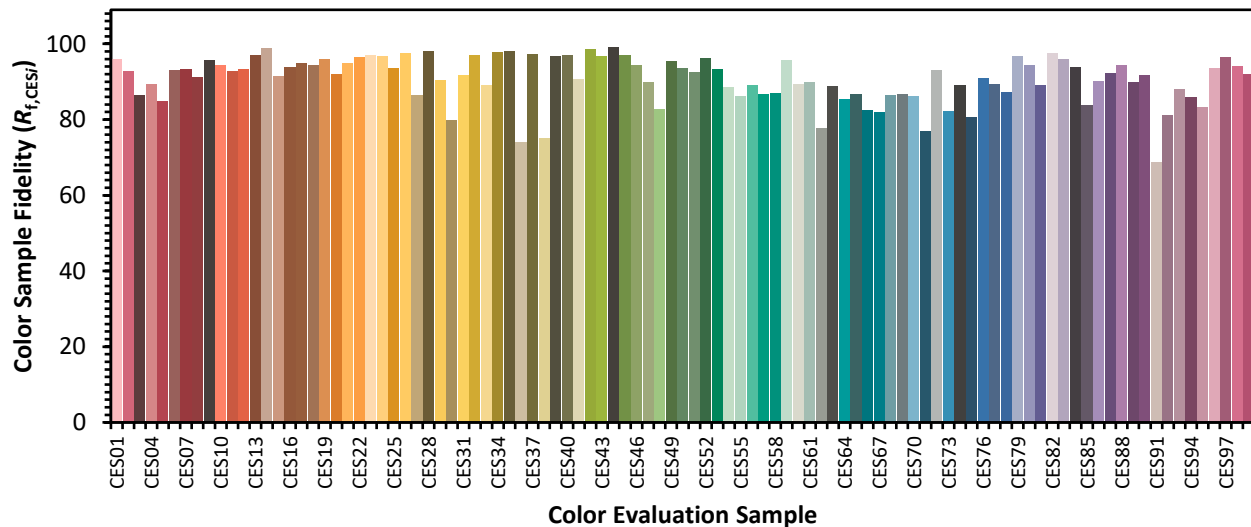
### Color Vector Graphics

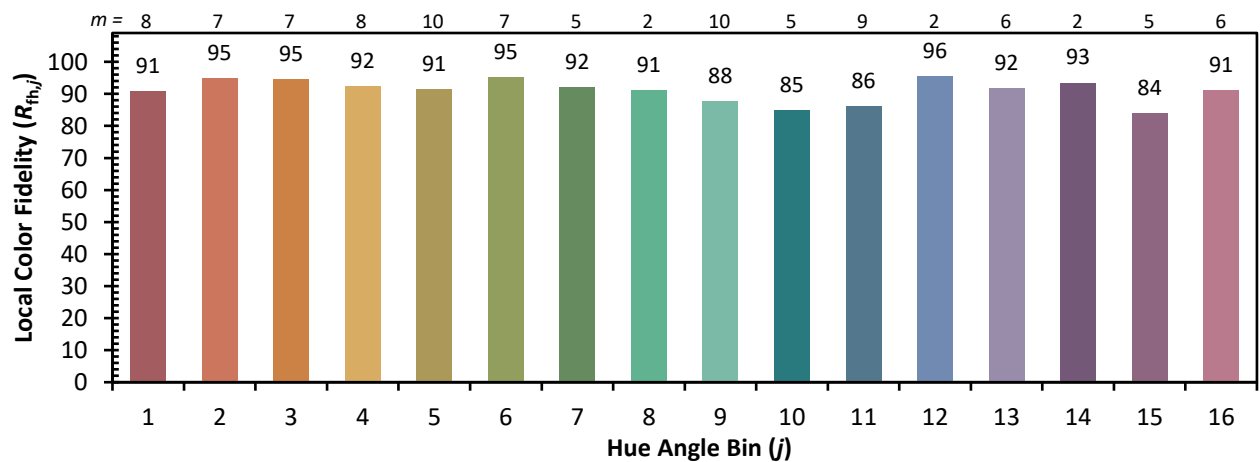
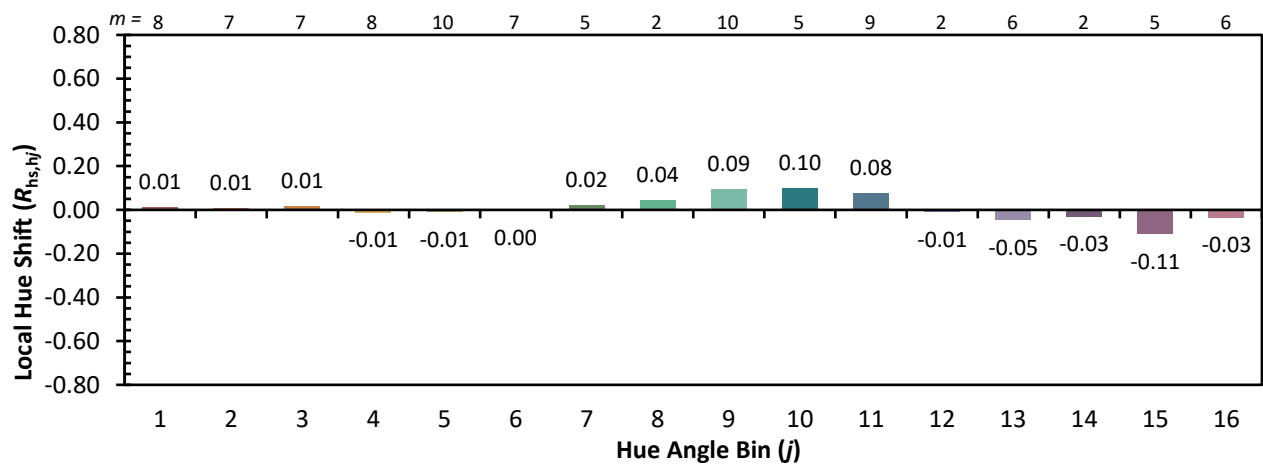
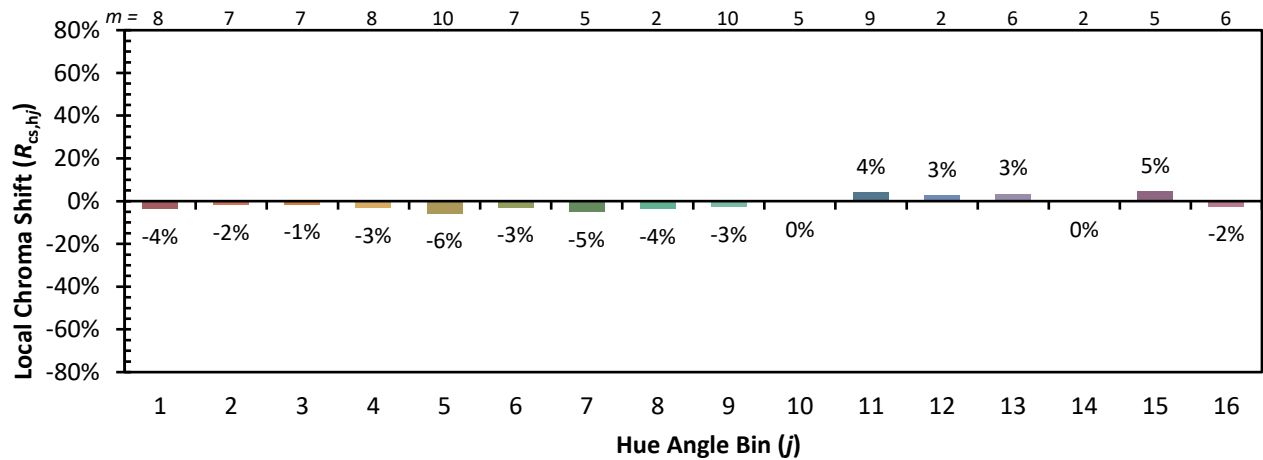




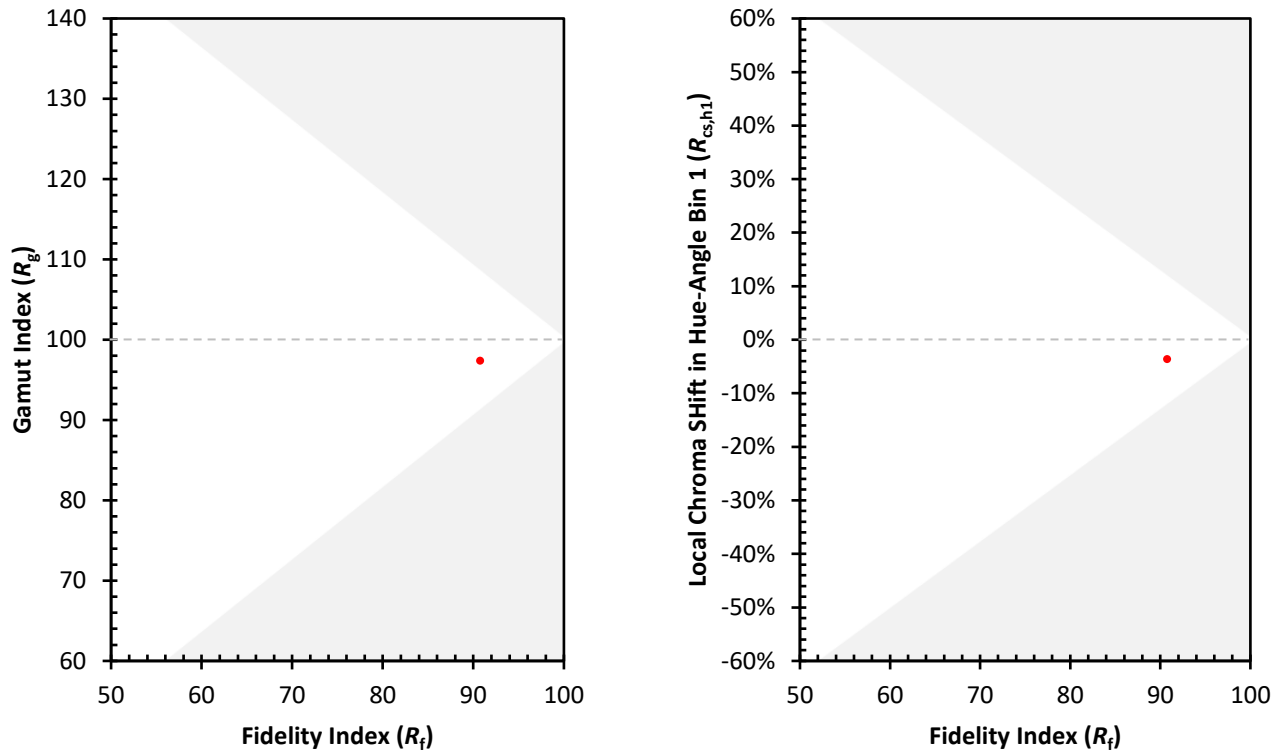
**Individual Sample Fidelity Index ( $R_{f,i}$ )**

|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 85 | CES26 = 98 | CES51 = 93 | CES76 = 91 |
| CES02 = 61 | CES27 = 86 | CES52 = 96 | CES77 = 89 |
| CES03 = 31 | CES28 = 98 | CES53 = 93 | CES78 = 87 |
| CES04 = 68 | CES29 = 90 | CES54 = 89 | CES79 = 97 |
| CES05 = 48 | CES30 = 80 | CES55 = 86 | CES80 = 94 |
| CES06 = 50 | CES31 = 92 | CES56 = 89 | CES81 = 89 |
| CES07 = 41 | CES32 = 97 | CES57 = 87 | CES82 = 97 |
| CES08 = 40 | CES33 = 89 | CES58 = 87 | CES83 = 96 |
| CES09 = 29 | CES34 = 98 | CES59 = 96 | CES84 = 94 |
| CES10 = 73 | CES35 = 98 | CES60 = 89 | CES85 = 84 |
| CES11 = 56 | CES36 = 74 | CES61 = 90 | CES86 = 90 |
| CES12 = 62 | CES37 = 97 | CES62 = 78 | CES87 = 92 |
| CES13 = 42 | CES38 = 75 | CES63 = 89 | CES88 = 95 |
| CES14 = 74 | CES39 = 97 | CES64 = 85 | CES89 = 90 |
| CES15 = 71 | CES40 = 97 | CES65 = 87 | CES90 = 92 |
| CES16 = 47 | CES41 = 91 | CES66 = 82 | CES91 = 69 |
| CES17 = 48 | CES42 = 99 | CES67 = 82 | CES92 = 81 |
| CES18 = 56 | CES43 = 97 | CES68 = 86 | CES93 = 88 |
| CES19 = 70 | CES44 = 99 | CES69 = 87 | CES94 = 86 |
| CES20 = 65 | CES45 = 97 | CES70 = 86 | CES95 = 83 |
| CES21 = 84 | CES46 = 94 | CES71 = 77 | CES96 = 94 |
| CES22 = 77 | CES47 = 90 | CES72 = 93 | CES97 = 97 |
| CES23 = 91 | CES48 = 83 | CES73 = 82 | CES98 = 94 |
| CES24 = 89 | CES49 = 95 | CES74 = 89 | CES99 = 92 |
| CES25 = 70 | CES50 = 94 | CES75 = 81 |            |



**Color Rendition by Hue-Angle Bin**


**Measure Comparisons**



(END OF REPORT)