

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: P1217177

Luminaire Tested: 14-ID2-25-CNV-L830-U

Issue Date: 12/5/2025

**Test Information**

Test Method: LM-79-2019  
Report Number: P1217177  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-2508-507-11)  
Test Lab: INNOVATION CENTER  
Issue Date: 12/5/2025  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: CORELITE  
Catalog Number: 14-ID2-25-CNV-L830-U  
Description: 1X4 IN DEPTH TROFFER WITH 2INCH CURVE DROP LENS  
Light Source: 3000K CCT, 80 CRI LEDS  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

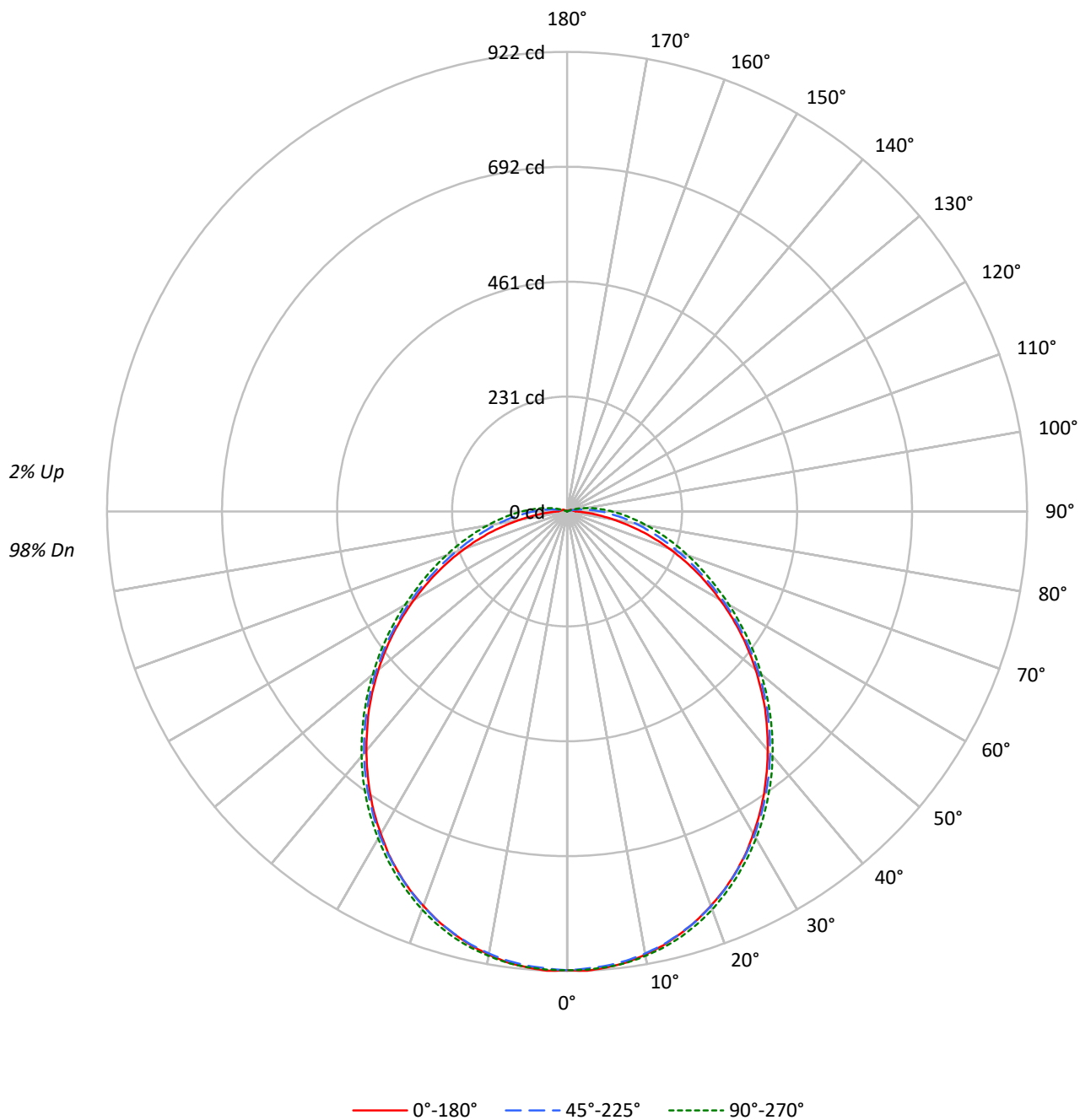
Lumens per Lamp: N/A  
Luminaire Lumens: 2619.6 lumens  
Efficiency: N/A  
Efficacy: 119.6 lumens/watt  
Spacing Criteria (0/90/45): 1.21 / 1.22 / 1.33  
Luminous Opening: Rectangular w/ Sides (W: 1' x L: 4' x H: 0.16')  
CIE Type: Direct

Input Watts (W): 21.9  
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



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### Luminous Intensity Polar Plot



TEST NUMBER: P1217177

CATALOG NUMBER: 14-ID2-25-CNV-L830-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   | 118 | 118 | 118 | 118 | 115 | 115 | 115 | 115 |  | 110 | 110 | 110 |  |  | 105 | 105 | 105 |  |  | 98 |
| 1   | 107 | 102 | 98  | 94  | 104 | 100 | 96  | 92  |  | 95  | 92  | 88  |  |  | 91  | 88  | 85  |  |  | 80 |
| 2   | 98  | 89  | 82  | 76  | 95  | 87  | 80  | 75  |  | 83  | 77  | 73  |  |  | 79  | 75  | 71  |  |  | 66 |
| 3   | 89  | 78  | 70  | 63  | 86  | 76  | 69  | 62  |  | 73  | 66  | 61  |  |  | 70  | 64  | 60  |  |  | 56 |
| 4   | 81  | 69  | 60  | 54  | 79  | 68  | 59  | 53  |  | 65  | 58  | 52  |  |  | 62  | 56  | 51  |  |  | 48 |
| 5   | 75  | 62  | 53  | 46  | 73  | 61  | 52  | 46  |  | 58  | 51  | 45  |  |  | 56  | 49  | 44  |  |  | 41 |
| 6   | 69  | 56  | 47  | 40  | 67  | 55  | 46  | 40  |  | 53  | 45  | 39  |  |  | 51  | 44  | 39  |  |  | 36 |
| 7   | 64  | 51  | 42  | 36  | 62  | 50  | 41  | 35  |  | 48  | 40  | 35  |  |  | 46  | 40  | 35  |  |  | 32 |
| 8   | 60  | 46  | 38  | 32  | 58  | 45  | 37  | 32  |  | 44  | 37  | 31  |  |  | 42  | 36  | 31  |  |  | 29 |
| 9   | 56  | 42  | 34  | 29  | 54  | 42  | 34  | 29  |  | 40  | 33  | 28  |  |  | 39  | 33  | 28  |  |  | 26 |
| 10  | 52  | 39  | 31  | 26  | 51  | 39  | 31  | 26  |  | 37  | 30  | 26  |  |  | 36  | 30  | 25  |  |  | 23 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 2477 | 2477 | 2477 |
| 5°  | 2472 | 2441 | 2445 |
| 10° | 2450 | 2401 | 2406 |
| 15° | 2418 | 2352 | 2360 |
| 20° | 2377 | 2296 | 2300 |
| 25° | 2330 | 2229 | 2231 |
| 30° | 2267 | 2156 | 2155 |
| 35° | 2201 | 2075 | 2074 |
| 40° | 2127 | 1987 | 1985 |
| 45° | 2055 | 1894 | 1888 |
| 50° | 1971 | 1792 | 1787 |
| 55° | 1882 | 1681 | 1685 |
| 60° | 1780 | 1571 | 1581 |
| 65° | 1671 | 1454 | 1487 |
| 70° | 1545 | 1345 | 1408 |
| 75° | 1399 | 1262 | 1348 |
| 80° | 1208 | 1200 | 1320 |
| 85° | 1055 | 1180 | 1351 |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 2055 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 87.0   | 3.3       |
| 10°-20°   | 247.6  | 9.5       |
| 20°-30°   | 369.0  | 14.1      |
| 30°-40°   | 434.3  | 16.6      |
| 40°-50°   | 438.2  | 16.7      |
| 50°-60°   | 386.3  | 14.7      |
| 60°-70°   | 295.9  | 11.3      |
| 70°-80°   | 193.8  | 7.4       |
| 80°-90°   | 103.6  | 4.0       |
| 90°-100°  | 44.0   | 1.7       |
| 100°-110° | 14.0   | 0.5       |
| 110°-120° | 3.3    | 0.1       |
| 120°-130° | 1.5    | 0.1       |
| 130°-140° | 0.7    | 0.0       |
| 140°-150° | 0.3    | 0.0       |
| 150°-160° | 0.0    | 0.0       |
| 160°-170° | 0.0    | 0.0       |
| 170°-180° | 0.0    | 0.0       |
| 0°-30°    | 703.7  | 26.9      |
| 0°-40°    | 1137.9 | 43.4      |
| 0°-60°    | 1962.4 | 74.9      |
| 0°-90°    | 2555.7 | 97.6      |
| 90°-120°  | 61.4   | 2.3       |
| 90°-150°  | 63.9   | 2.4       |
| 90°-180°  | 64.0   | 2.4       |
| 0°-180°   | 2619.6 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°  | 22.5° | 45° | 67.5° | 90° | Flux |
|------|-----|-------|-----|-------|-----|------|
| 0°   | 920 | 920   | 920 | 920   | 920 |      |
| 5°   | 918 | 917   | 915 | 915   | 918 | 87   |
| 15°  | 877 | 876   | 876 | 880   | 883 | 247  |
| 25°  | 799 | 798   | 800 | 804   | 807 | 368  |
| 35°  | 689 | 689   | 694 | 700   | 702 | 431  |
| 45°  | 562 | 562   | 568 | 575   | 576 | 433  |
| 55°  | 424 | 424   | 431 | 440   | 441 | 379  |
| 65°  | 285 | 286   | 298 | 309   | 314 | 282  |
| 75°  | 155 | 161   | 185 | 202   | 207 | 164  |
| 85°  | 50  | 68    | 100 | 119   | 124 | 50   |
| 90°  | 18  | 39    | 67  | 85    | 90  | 11   |
| 95°  | 14  | 20    | 41  | 57    | 62  | 11   |
| 105° | 10  | 8     | 9   | 18    | 21  | 11   |
| 115° | 7   | 5     | 3   | 0     | 0   | 7    |
| 125° | 4   | 3     | 1   | 0     | 0   | 4    |
| 135° | 2   | 2     | 1   | 0     | 0   | 2    |
| 145° | 1   | 1     | 0   | 0     | 0   | 1    |
| 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    |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°    | 22.5° | 45°   | 67.5° | 90°   |
|--------|-------|-------|-------|-------|-------|
| 0°     | 920.4 | 920.4 | 920.4 | 920.4 | 920.4 |
| 2.5°   | 922.2 | 920.9 | 917.8 | 918.7 | 920.0 |
| 5°     | 918.2 | 916.9 | 914.7 | 915.2 | 917.8 |
| 7.5°   | 912.5 | 910.7 | 909.0 | 910.3 | 913.4 |
| 10°    | 902.8 | 901.9 | 900.6 | 902.4 | 905.5 |
| 12.5°  | 891.4 | 890.5 | 890.1 | 892.3 | 895.8 |
| 15°    | 877.3 | 876.4 | 876.4 | 879.9 | 883.4 |
| 17.5°  | 861.0 | 860.5 | 861.4 | 865.4 | 868.0 |
| 20°    | 842.0 | 841.6 | 842.9 | 846.9 | 850.0 |
| 22.5°  | 822.2 | 821.3 | 822.7 | 826.2 | 829.3 |
| 25°    | 799.3 | 798.0 | 800.2 | 804.2 | 807.3 |
| 27.5°  | 774.7 | 772.5 | 776.0 | 780.4 | 783.0 |
| 30°    | 746.5 | 746.9 | 750.4 | 754.8 | 757.5 |
| 32.5°  | 718.7 | 718.3 | 722.7 | 728.0 | 730.6 |
| 35°    | 688.8 | 688.8 | 694.1 | 699.8 | 702.0 |
| 37.5°  | 657.5 | 658.8 | 664.1 | 669.4 | 672.1 |
| 40°    | 625.8 | 627.6 | 632.9 | 638.6 | 640.8 |
| 42.5°  | 593.2 | 595.0 | 600.7 | 606.9 | 608.6 |
| 45°    | 561.5 | 562.0 | 568.1 | 574.7 | 575.6 |
| 47.5°  | 527.2 | 527.6 | 534.2 | 540.8 | 542.1 |
| 50°    | 493.2 | 493.7 | 500.3 | 507.3 | 508.2 |
| 52.5°  | 458.9 | 459.3 | 465.1 | 473.4 | 475.2 |
| 55°    | 424.1 | 424.1 | 430.7 | 439.5 | 441.3 |
| 57.5°  | 389.3 | 389.3 | 396.4 | 405.6 | 407.8 |
| 60°    | 353.6 | 354.5 | 363.3 | 372.1 | 375.2 |
| 62.5°  | 319.3 | 320.2 | 329.9 | 339.1 | 343.1 |
| 65°    | 284.9 | 286.3 | 297.7 | 308.7 | 313.6 |
| 67.5°  | 251.5 | 253.2 | 266.4 | 280.5 | 284.9 |
| 70°    | 218.0 | 221.5 | 237.4 | 252.8 | 257.6 |
| 72.5°  | 185.8 | 189.8 | 211.0 | 227.2 | 231.7 |
| 75°    | 154.6 | 160.7 | 185.4 | 202.1 | 207.0 |
| 77.5°  | 124.2 | 133.4 | 161.6 | 179.7 | 184.1 |
| 80°    | 95.6  | 109.2 | 139.6 | 157.7 | 162.5 |
| 82.5°  | 71.3  | 86.8  | 119.3 | 137.8 | 142.2 |
| 85°    | 49.8  | 68.3  | 100.0 | 118.9 | 123.8 |
| 87.5°  | 32.1  | 52.4  | 82.8  | 101.3 | 106.6 |
| 90°    | 17.6  | 38.8  | 67.4  | 85.0  | 90.3  |
| 92.5°  | 15.9  | 28.2  | 53.7  | 70.5  | 75.7  |
| 95°    | 14.5  | 19.8  | 41.4  | 57.3  | 62.5  |
| 97.5°  | 13.2  | 13.2  | 30.8  | 45.4  | 50.2  |
| 100°   | 12.3  | 9.7   | 22.0  | 34.8  | 39.6  |
| 102.5° | 11.0  | 8.8   | 14.5  | 25.5  | 29.9  |
| 105°   | 10.1  | 7.9   | 8.8   | 17.6  | 21.1  |
| 107.5° | 9.2   | 7.0   | 4.4   | 11.0  | 14.1  |
| 110°   | 8.4   | 6.6   | 3.5   | 5.3   | 8.4   |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°  | 22.5° | 45° | 67.5° | 90° |
|--------|-----|-------|-----|-------|-----|
| 112.5° | 7.5 | 5.7   | 3.1 | 1.3   | 3.1 |
| 115°   | 6.6 | 5.3   | 2.6 | 0.0   | 0.0 |
| 117.5° | 5.7 | 4.8   | 2.2 | 0.0   | 0.0 |
| 120°   | 5.3 | 4.0   | 2.2 | 0.0   | 0.0 |
| 122.5° | 4.8 | 3.5   | 1.8 | 0.0   | 0.0 |
| 125°   | 4.0 | 3.1   | 1.3 | 0.0   | 0.0 |
| 127.5° | 3.5 | 2.6   | 1.3 | 0.0   | 0.0 |
| 130°   | 3.1 | 2.6   | 0.9 | 0.0   | 0.0 |
| 132.5° | 2.6 | 2.2   | 0.9 | 0.0   | 0.0 |
| 135°   | 2.2 | 1.8   | 0.9 | 0.0   | 0.0 |
| 137.5° | 2.2 | 1.8   | 0.4 | 0.0   | 0.0 |
| 140°   | 1.8 | 1.3   | 0.4 | 0.0   | 0.0 |
| 142.5° | 1.3 | 0.9   | 0.4 | 0.0   | 0.0 |
| 145°   | 1.3 | 0.9   | 0.0 | 0.0   | 0.0 |
| 147.5° | 0.9 | 0.9   | 0.0 | 0.0   | 0.0 |
| 150°   | 0.9 | 0.4   | 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 |

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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 | 13.22            | 14.81 | 13.62 | 15.17 | 15.55 | 13.86          | 15.45 | 14.26 | 15.82 | 16.19 |
|                 | 3H   | 14.81            | 16.26 | 15.23 | 16.64 | 17.06 | 15.83          | 17.28 | 16.25 | 17.66 | 18.08 |
|                 | 4H   | 15.38            | 16.75 | 15.82 | 17.15 | 17.58 | 16.73          | 18.09 | 17.17 | 18.49 | 18.93 |
|                 | 6H   | 15.78            | 17.05 | 16.23 | 17.46 | 17.91 | 17.60          | 18.87 | 18.05 | 19.29 | 19.74 |
|                 | 8H   | 15.90            | 17.11 | 16.36 | 17.55 | 18.01 | 18.03          | 19.24 | 18.49 | 19.68 | 20.13 |
|                 | 12H  | 15.98            | 17.15 | 16.45 | 17.58 | 18.06 | 18.47          | 19.63 | 18.93 | 20.06 | 20.55 |
| 4H              | 2H   | 13.86            | 15.22 | 14.29 | 15.62 | 16.05 | 14.37          | 15.74 | 14.81 | 16.13 | 16.57 |
|                 | 3H   | 15.68            | 16.83 | 16.13 | 17.28 | 17.74 | 16.58          | 17.73 | 17.03 | 18.18 | 18.64 |
|                 | 4H   | 16.37            | 17.42 | 16.84 | 17.88 | 18.37 | 17.63          | 18.68 | 18.10 | 19.14 | 19.63 |
|                 | 6H   | 16.89            | 17.82 | 17.38 | 18.30 | 18.81 | 18.68          | 19.61 | 19.18 | 20.09 | 20.60 |
|                 | 8H   | 17.06            | 17.93 | 17.56 | 18.42 | 18.94 | 19.20          | 20.07 | 19.70 | 20.55 | 21.07 |
|                 | 12H  | 17.19            | 17.97 | 17.71 | 18.49 | 19.02 | 19.75          | 20.53 | 20.26 | 21.05 | 21.57 |
| 8H              | 4H   | 16.79            | 17.66 | 17.29 | 18.15 | 18.67 | 17.90          | 18.77 | 18.40 | 19.26 | 19.78 |
|                 | 6H   | 17.47            | 18.20 | 18.00 | 18.73 | 19.26 | 19.13          | 19.86 | 19.66 | 20.39 | 20.92 |
|                 | 8H   | 17.72            | 18.38 | 18.26 | 18.92 | 19.47 | 19.77          | 20.43 | 20.31 | 20.98 | 21.52 |
|                 | 12H  | 17.93            | 18.52 | 18.47 | 19.05 | 19.66 | 20.48          | 21.07 | 21.03 | 21.60 | 22.21 |
| 12H             | 4H   | 16.89            | 17.67 | 17.41 | 18.19 | 18.72 | 17.93          | 18.71 | 18.45 | 19.23 | 19.76 |
|                 | 6H   | 17.62            | 18.28 | 18.16 | 18.83 | 19.37 | 19.18          | 19.84 | 19.73 | 20.39 | 20.93 |
|                 | 8H   | 17.96            | 18.54 | 18.50 | 19.07 | 19.69 | 19.90          | 20.49 | 20.45 | 21.02 | 21.63 |



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

Report Prepared for

Cooper Lighting Solutions

Corelite

Report Number: SP1-2506-458-3

Test Date: 07/24/2025

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

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

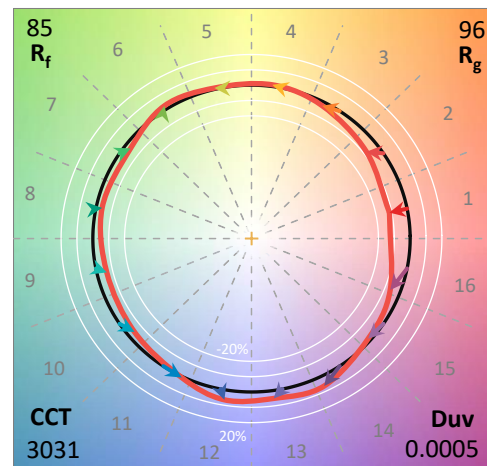
### Test Information

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

### Spectral Parameters

CCT (K): 3031  
 CIE  $u'$ : 0.2493  
 CIE  $v'$ : 0.5215  
 Duv: 0.0005  
 CIE x: 0.4355  
 CIE y: 0.4049  
 CIE z: 0.1596  
 Peak Wavelength (nm): 603  
 Dominant Wavelength (nm): 582  
 Purity: 52.24762  
 R<sub>f</sub>: 84.8  
 R<sub>g</sub>: 95.8

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



### Test Conditions

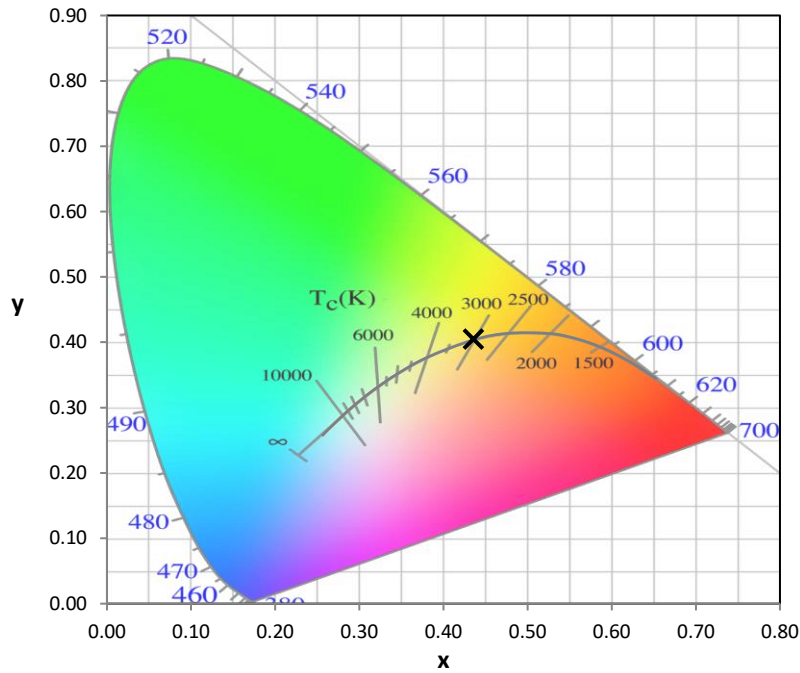
Stabilization Time: 38M  
 Operation Time: 1H 38M  
 Sphere Temperature (°C): 24.0

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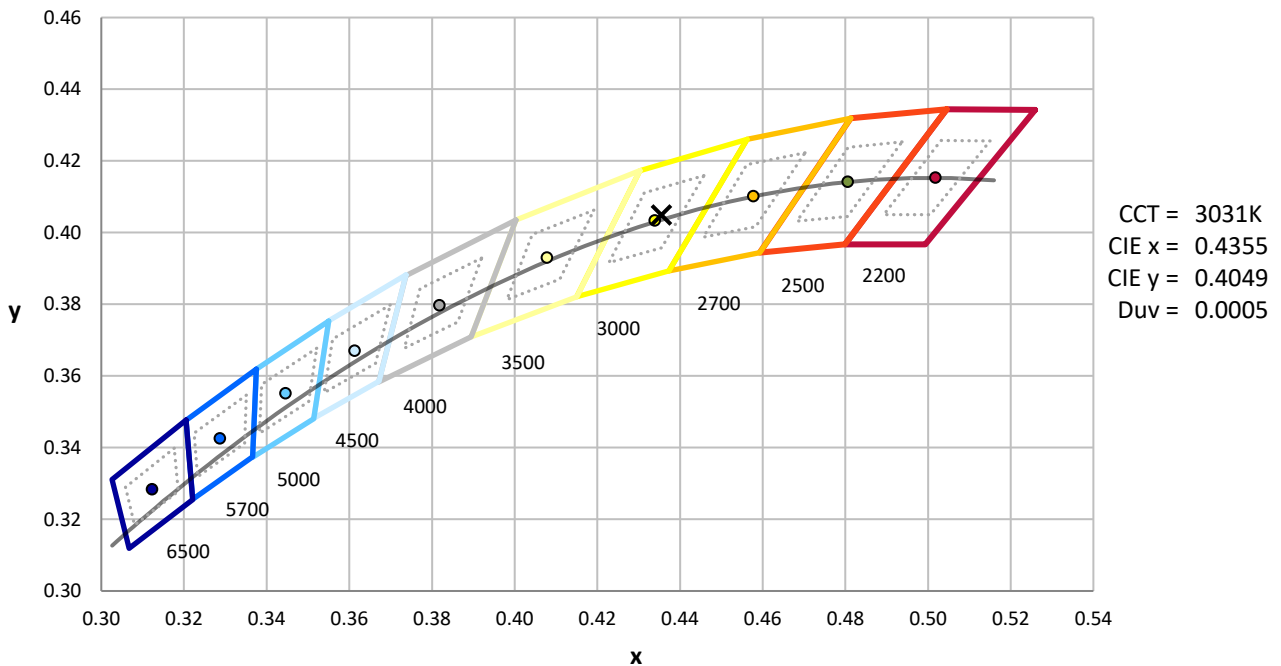
| Measurement and Test Equipment |                       |                  |                      |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument                     | Identification Number | Calibration Date | Calibration Due Date |
| Photometer                     | 76INCH SPHERE IN0058  | 6/16/2025        | 12/16/2025           |
| Power Meter                    | XITRON INXT2011004    | 1/21/2025        | 1/21/2026            |
| AC Power Source                | CHROMA 61603 IN0063   | 10/22/2024       | 10/22/2025           |
| DC Power Source                | AGILENT E3634A IN0208 | 10/22/2024       | 10/22/2025           |
| Sphere Thermometer             | ONSET IN0085          | 10/22/2024       | 10/22/2025           |
| Room Thermometer               | ONSET IN0046          | 10/22/2024       | 10/22/2025           |

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**CIE 1931 Chromaticity Diagram**



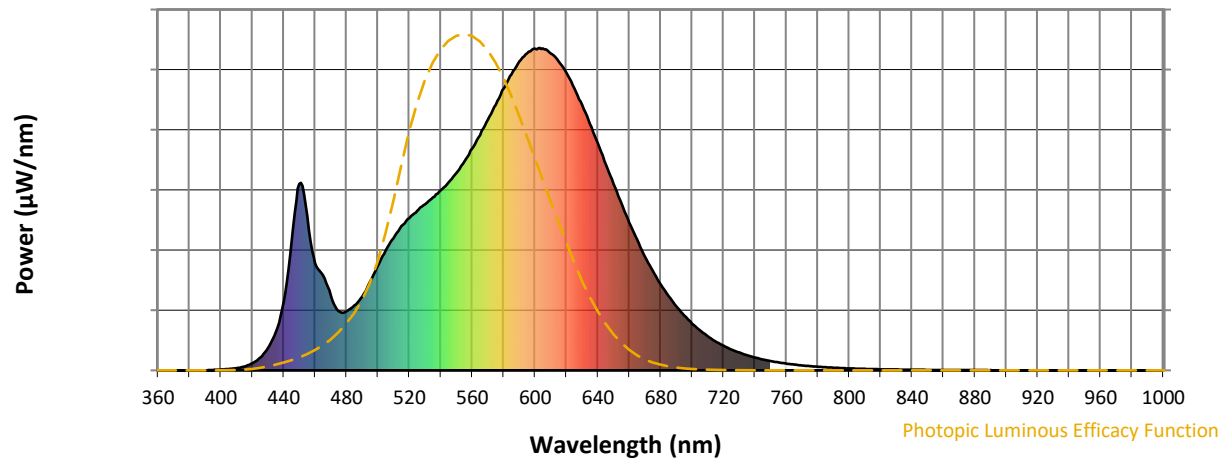
**CIE 1931 Chromaticity Diagram with 2017 ANSI 7-Step and 4-Step Quadrangles**



Point lies inside the ANSI 3000K 4-step quadrangle

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### Photopic Flux vs. Wavelength

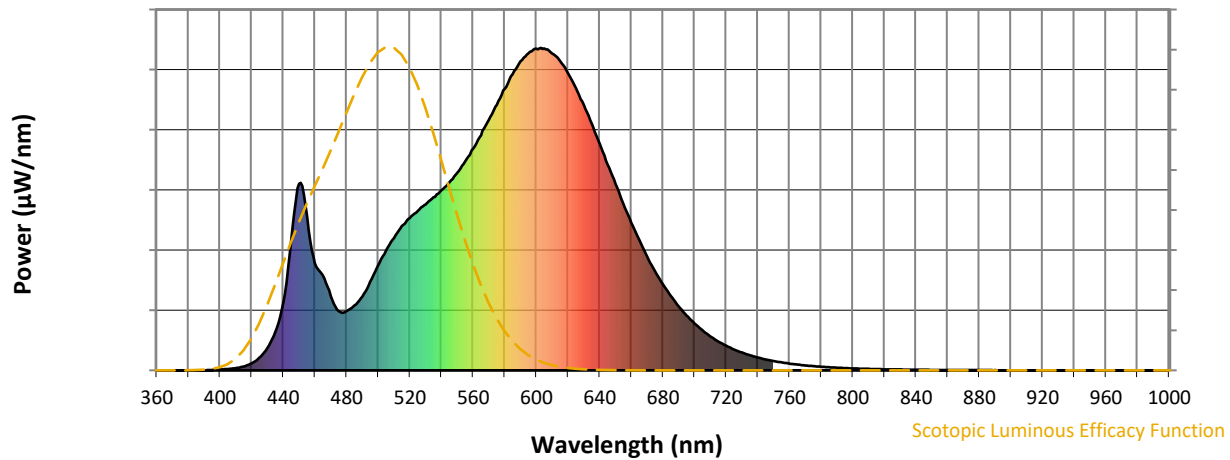


### Photopic Lumens: NR

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

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### Scotopic Flux vs. Wavelength



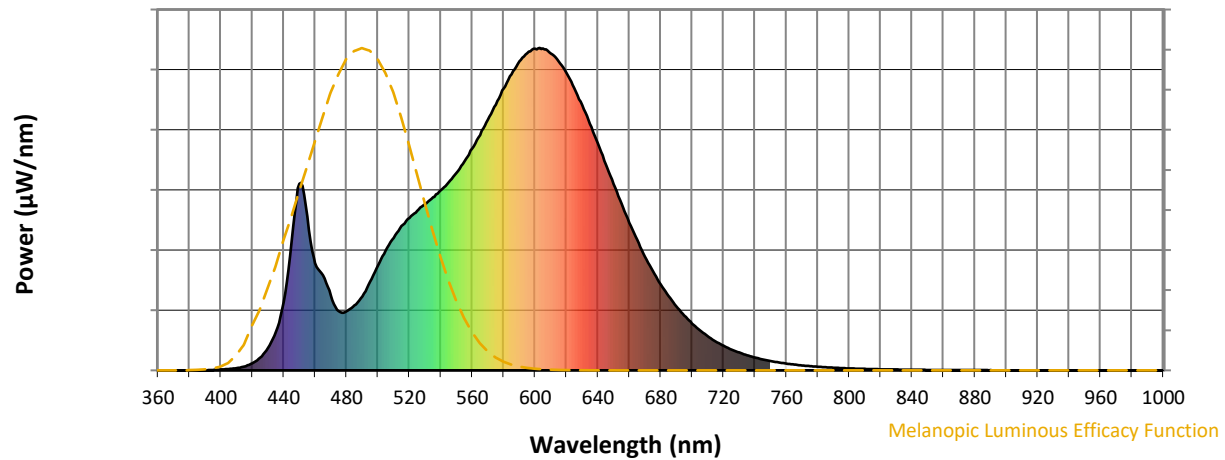
Scotopic Lumens: NR

S/P: 1.35

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

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### Melanopic Flux vs. Wavelength



Melanopic Lumens: NR

M/P: 2.59

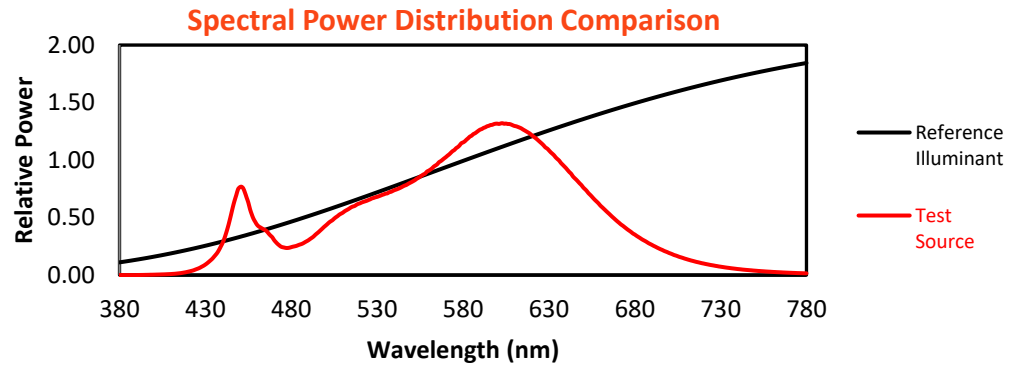
| $\lambda$<br>(nm) | Power<br>$\text{W}^{\wedge}/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^{\wedge}/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^{\wedge}/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm)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

REPORT NUMBER: SP1-2506-458-3

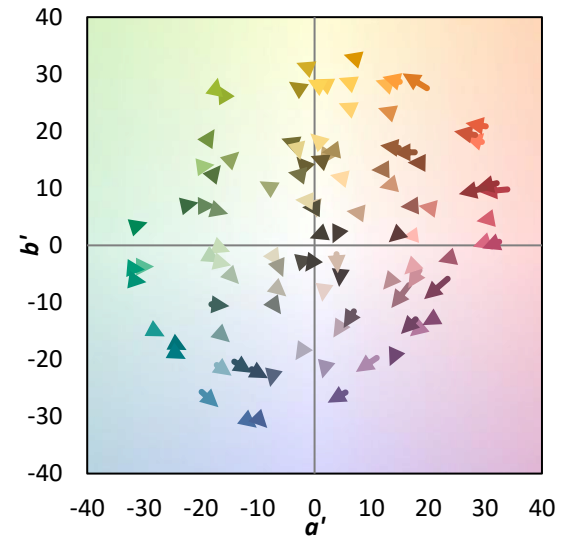
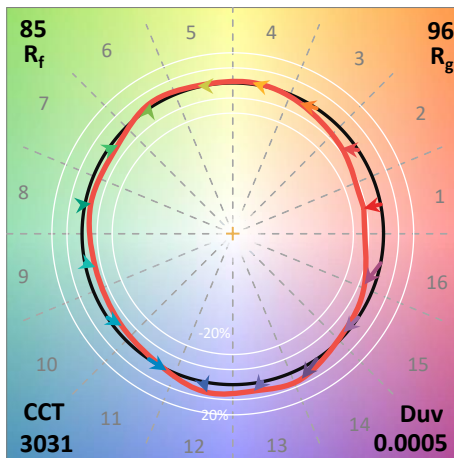
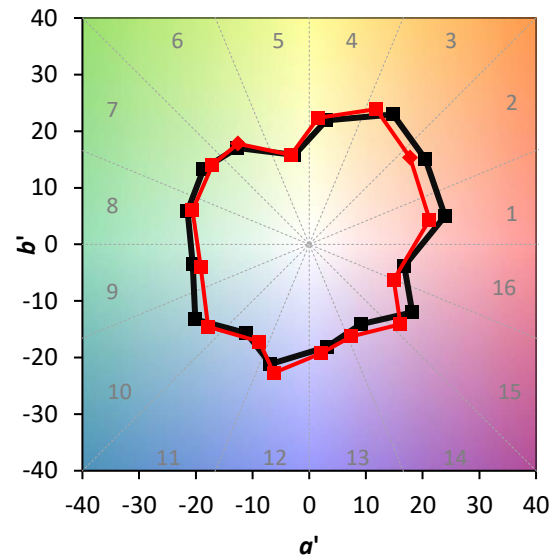
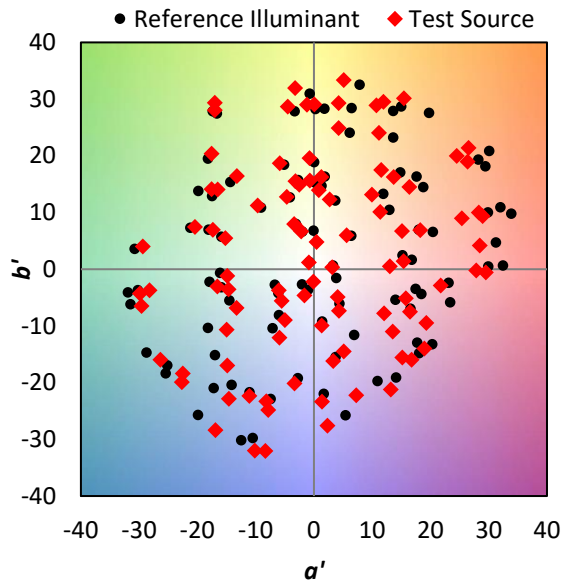
TM-30-18

### Summary

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



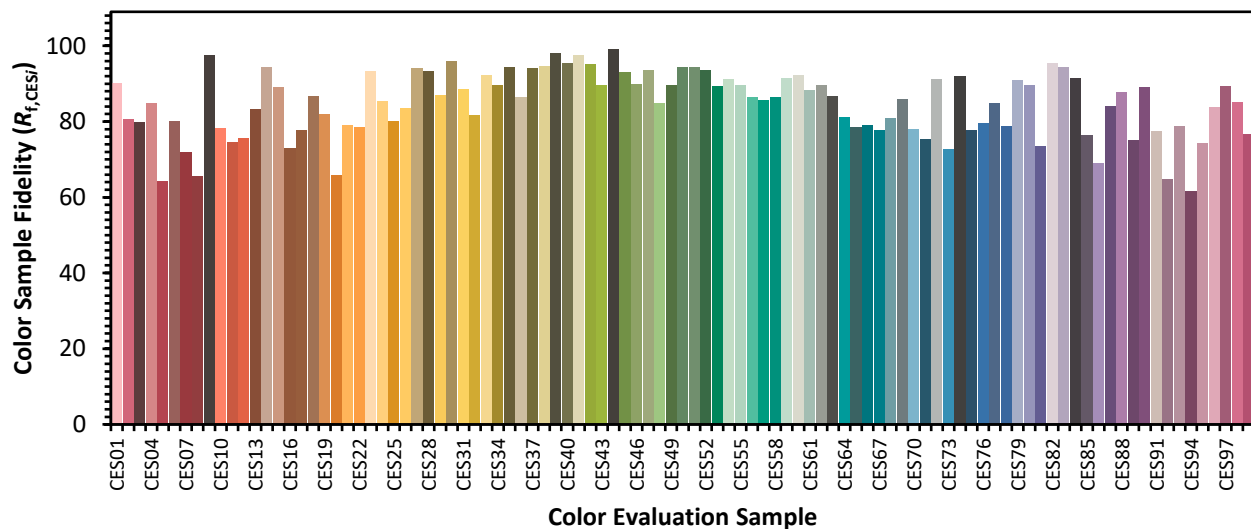
### Color Vector Graphics



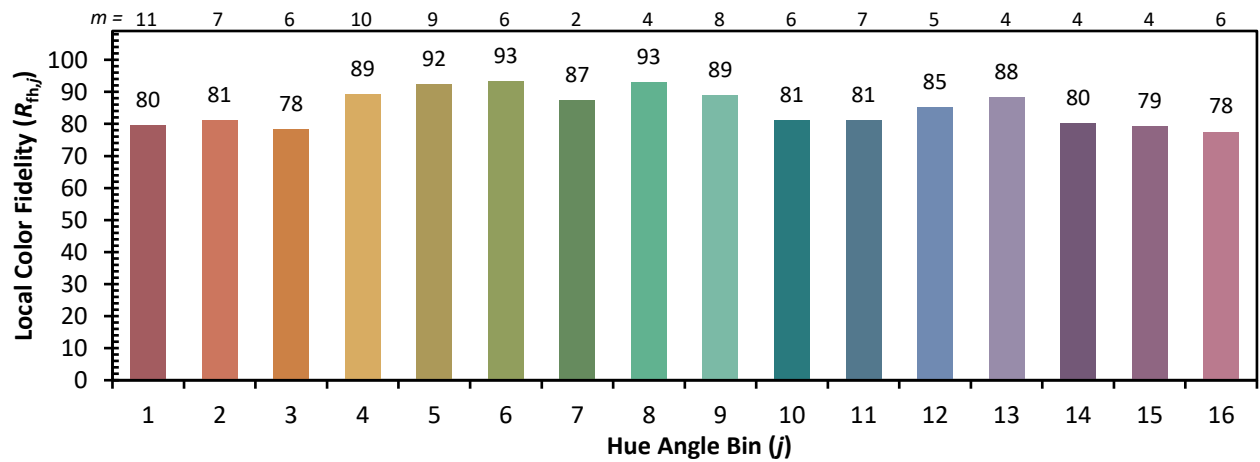
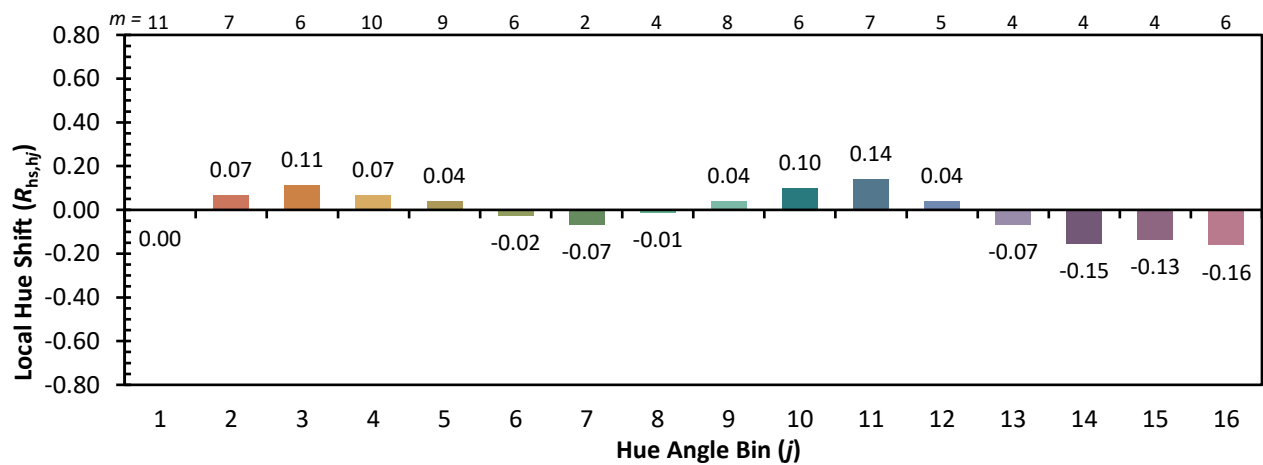
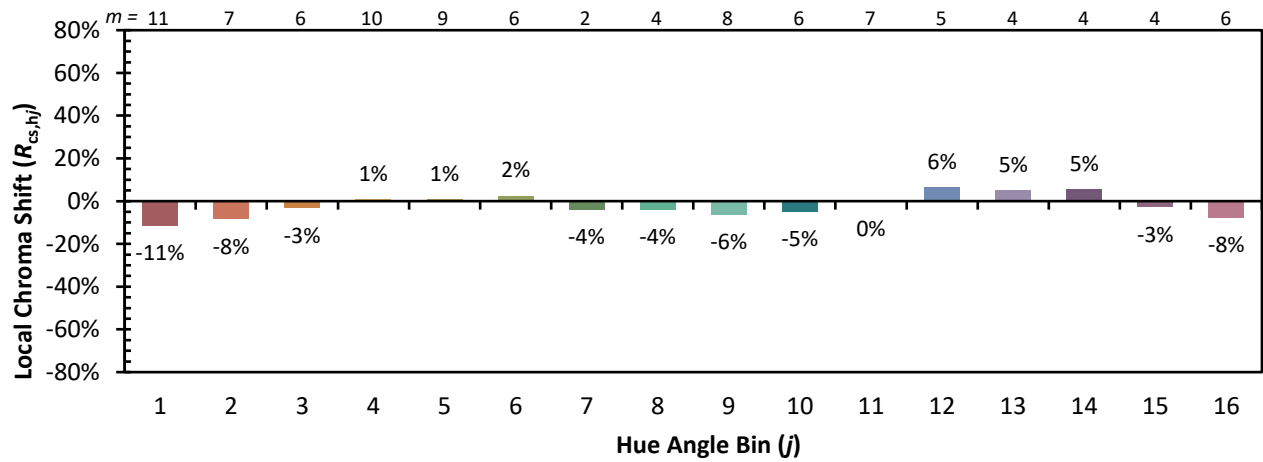


**Individual Sample Fidelity Index ( $R_{f,i}$ )**

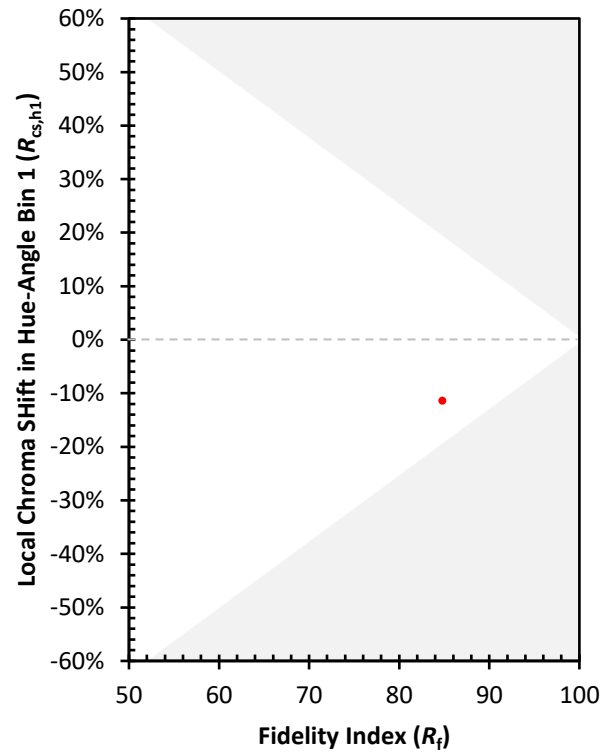
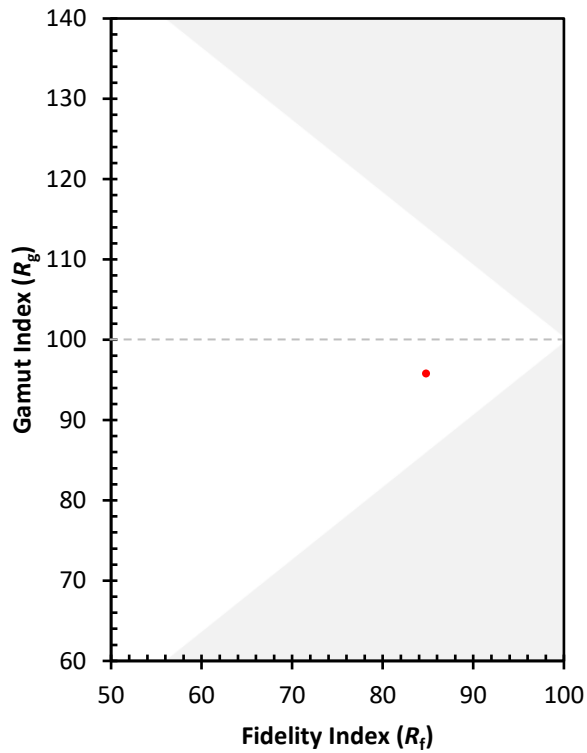
|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 86 | CES26 = 84 | CES51 = 94 | CES76 = 80 |
| CES02 = 63 | CES27 = 94 | CES52 = 94 | CES77 = 85 |
| CES03 = 31 | CES28 = 93 | CES53 = 89 | CES78 = 79 |
| CES04 = 70 | CES29 = 87 | CES54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



Color Rendition by Hue-Angle Bin



**Measure Comparisons**



(END OF REPORT)