

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: P1217156

Luminaire Tested: 14-ID2-70-CNC-L840-U

Issue Date: 12/5/2025

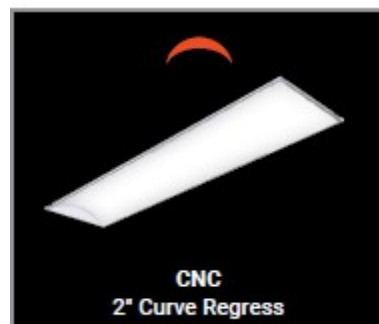
**Test Information**

Test Method: LM-79-2019  
Report Number: P1217156  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-2508-507-17)  
Test Lab: INNOVATION CENTER  
Issue Date: 12/5/2025  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: CORELITE  
Catalog Number: 14-ID2-70-CNC-L840-U  
Description: 1X4 IN DEPTH TROFFER WITH 2INCH CURVE REGRESS LENS  
Light Source: 4000K CCT, 80 CRI LEDS  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

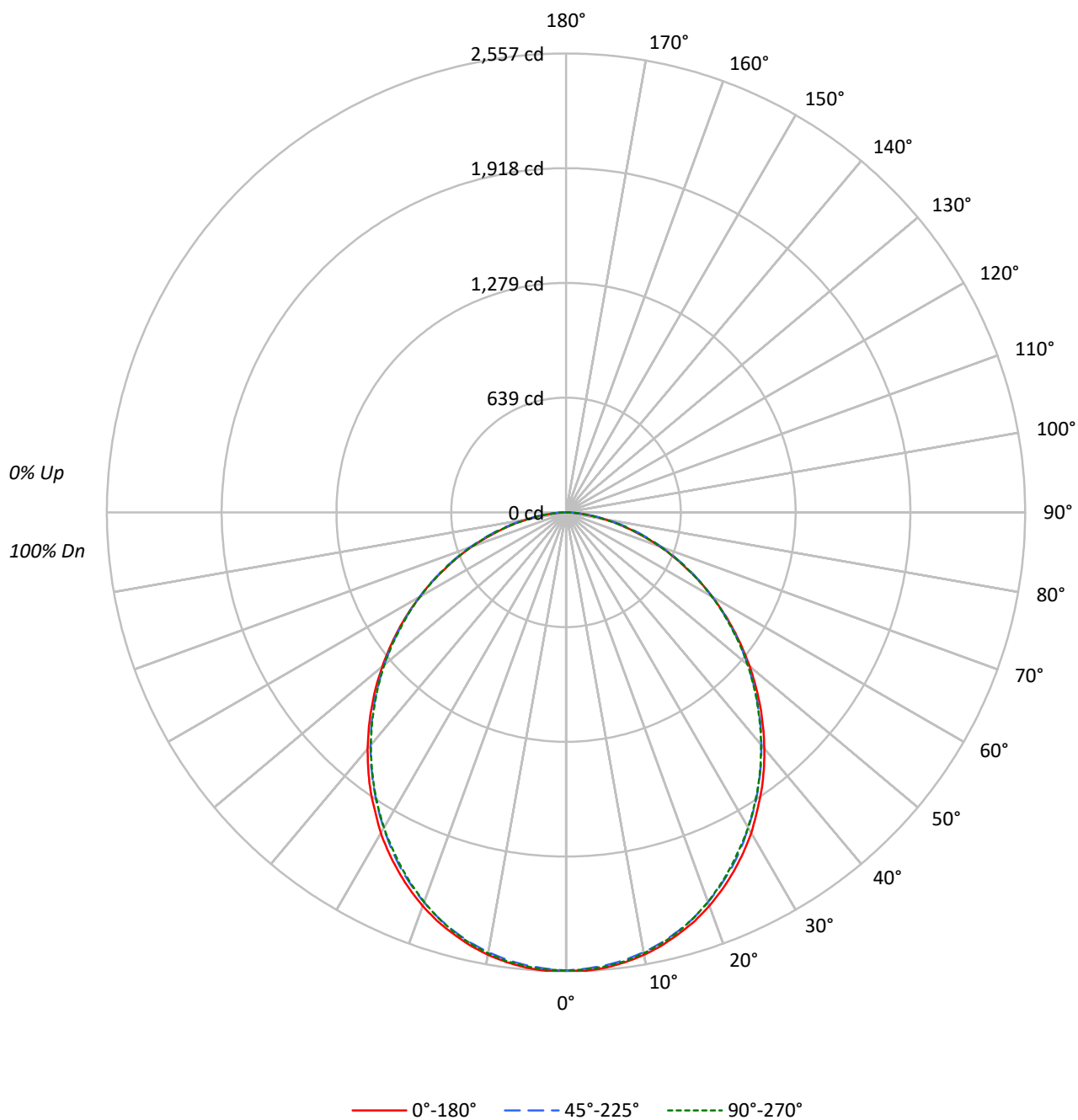
Lumens per Lamp: N/A  
Luminaire Lumens: 6532.8 lumens  
Efficiency: N/A  
Efficacy: 110.7 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.19 / 1.3  
Luminous Opening: Rectangular (W 1' x L: 4' x H: 0')  
CIE Type: Direct

Input Watts (W): 59  
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: P1217156

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

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| RF  | 20  |     |     |     | 20  |     |     |     |     | 20  |     |     |     |     | 20  |     |     |     |     | 20  |
| RC  | 80  |     |     |     | 70  |     |     |     |     | 50  |     |     |     |     | 30  |     |     |     |     | 0   |
| RW  | 70  | 50  | 30  | 10  | 70  | 50  | 30  | 10  | 50  | 30  | 10  | 50  | 30  | 10  | 50  | 30  | 10  | 50  | 30  | 0   |
| RCR |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| 0   | 119 | 119 | 119 | 119 | 116 | 116 | 116 | 116 | 111 | 111 | 111 | 106 | 106 | 106 | 102 | 102 | 102 | 102 | 102 | 100 |
| 1   | 109 | 104 | 100 | 97  | 106 | 102 | 98  | 95  | 98  | 95  | 92  | 94  | 92  | 89  | 90  | 88  | 87  | 87  | 87  | 84  |
| 2   | 99  | 91  | 85  | 79  | 97  | 90  | 83  | 78  | 86  | 81  | 76  | 83  | 78  | 75  | 80  | 76  | 73  | 73  | 73  | 71  |
| 3   | 91  | 81  | 73  | 66  | 88  | 79  | 72  | 66  | 76  | 70  | 64  | 73  | 68  | 63  | 71  | 66  | 62  | 62  | 62  | 60  |
| 4   | 83  | 72  | 63  | 56  | 81  | 70  | 62  | 56  | 68  | 61  | 55  | 65  | 59  | 54  | 63  | 58  | 54  | 54  | 54  | 52  |
| 5   | 77  | 64  | 55  | 49  | 75  | 63  | 55  | 48  | 61  | 54  | 48  | 59  | 53  | 47  | 57  | 51  | 47  | 47  | 47  | 45  |
| 6   | 71  | 58  | 49  | 43  | 69  | 57  | 49  | 43  | 55  | 48  | 42  | 53  | 47  | 42  | 52  | 46  | 41  | 41  | 41  | 39  |
| 7   | 66  | 53  | 44  | 38  | 64  | 52  | 44  | 38  | 50  | 43  | 37  | 49  | 42  | 37  | 47  | 41  | 37  | 37  | 37  | 35  |
| 8   | 61  | 48  | 40  | 34  | 60  | 47  | 39  | 34  | 46  | 39  | 34  | 45  | 38  | 33  | 44  | 38  | 33  | 33  | 33  | 31  |
| 9   | 57  | 44  | 36  | 31  | 56  | 44  | 36  | 31  | 42  | 35  | 30  | 41  | 35  | 30  | 40  | 34  | 30  | 30  | 30  | 28  |
| 10  | 54  | 41  | 33  | 28  | 53  | 40  | 33  | 28  | 39  | 32  | 28  | 38  | 32  | 27  | 38  | 32  | 27  | 27  | 27  | 26  |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 6869 | 6869 | 6869 |
| 5°  | 6880 | 6844 | 6859 |
| 10° | 6841 | 6802 | 6817 |
| 15° | 6771 | 6727 | 6740 |
| 20° | 6683 | 6619 | 6616 |
| 25° | 6557 | 6484 | 6461 |
| 30° | 6409 | 6309 | 6302 |
| 35° | 6232 | 6134 | 6126 |
| 40° | 6036 | 5947 | 5939 |
| 45° | 5821 | 5745 | 5732 |
| 50° | 5589 | 5534 | 5524 |
| 55° | 5341 | 5305 | 5279 |
| 60° | 5063 | 5063 | 5046 |
| 65° | 4725 | 4795 | 4753 |
| 70° | 4378 | 4474 | 4404 |
| 75° | 3869 | 4111 | 3950 |
| 80° | 3288 | 3546 | 3288 |
| 85° | 2470 | 2674 | 2572 |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 5821 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 240.9  | 3.7       |
| 10°-20°   | 681.7  | 10.4      |
| 20°-30°   | 1006.1 | 15.4      |
| 30°-40°   | 1170.8 | 17.9      |
| 40°-50°   | 1166.8 | 17.9      |
| 50°-60°   | 1011.7 | 15.5      |
| 60°-70°   | 742.1  | 11.4      |
| 70°-80°   | 410.4  | 6.3       |
| 80°-90°   | 102.2  | 1.6       |
| 90°-100°  | 0.0    | 0.0       |
| 100°-110° | 0.0    | 0.0       |
| 110°-120° | 0.0    | 0.0       |
| 120°-130° | 0.0    | 0.0       |
| 130°-140° | 0.0    | 0.0       |
| 140°-150° | 0.0    | 0.0       |
| 150°-160° | 0.0    | 0.0       |
| 160°-170° | 0.0    | 0.0       |
| 170°-180° | 0.0    | 0.0       |
| 0°-30°    | 1928.7 | 29.5      |
| 0°-40°    | 3099.6 | 47.4      |
| 0°-60°    | 5278.1 | 80.8      |
| 0°-90°    | 6532.8 | 100.0     |
| 90°-120°  | 0.0    | 0.0       |
| 90°-150°  | 0.0    | 0.0       |
| 90°-180°  | 0.0    | 0.0       |
| 0°-180°   | 6532.8 | 100.0     |

**CANDELA DISTRIBUTION:**

|     | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|-----|------|-------|------|-------|------|------|
| 0°  | 2552 | 2552  | 2552 | 2552  | 2552 |      |
| 5°  | 2547 | 2544  | 2534 | 2534  | 2539 | 242  |
| 15° | 2430 | 2426  | 2415 | 2411  | 2419 | 685  |
| 25° | 2208 | 2196  | 2184 | 2172  | 2176 | 1017 |
| 35° | 1897 | 1885  | 1867 | 1858  | 1865 | 1186 |
| 45° | 1530 | 1522  | 1510 | 1501  | 1506 | 1180 |
| 55° | 1138 | 1136  | 1131 | 1124  | 1125 | 1018 |
| 65° | 742  | 754   | 753  | 743   | 746  | 738  |
| 75° | 372  | 396   | 395  | 381   | 380  | 398  |
| 85° | 80   | 91    | 87   | 80    | 83   | 97   |
| 90° | 0    | 0     | 0    | 0     | 0    |      |

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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|-------|--------|--------|--------|--------|--------|
| 0°    | 2552.5 | 2552.5 | 2552.5 | 2552.5 | 2552.5 |
| 2.5°  | 2556.9 | 2553.6 | 2544.7 | 2544.7 | 2549.2 |
| 5°    | 2546.9 | 2543.6 | 2533.6 | 2533.6 | 2539.2 |
| 7.5°  | 2528.1 | 2525.8 | 2514.7 | 2514.7 | 2522.5 |
| 10°   | 2503.6 | 2499.2 | 2489.2 | 2488.1 | 2494.7 |
| 12.5° | 2471.4 | 2467.0 | 2455.9 | 2453.6 | 2460.3 |
| 15°   | 2430.3 | 2425.9 | 2414.8 | 2411.4 | 2419.2 |
| 17.5° | 2387.0 | 2378.1 | 2368.1 | 2361.5 | 2368.1 |
| 20°   | 2333.7 | 2324.8 | 2311.5 | 2303.7 | 2310.4 |
| 22.5° | 2273.7 | 2263.7 | 2250.4 | 2238.2 | 2245.9 |
| 25°   | 2208.2 | 2196.0 | 2183.7 | 2171.5 | 2176.0 |
| 27.5° | 2138.2 | 2123.8 | 2109.3 | 2098.2 | 2102.6 |
| 30°   | 2062.7 | 2047.1 | 2030.5 | 2021.6 | 2028.2 |
| 32.5° | 1978.2 | 1969.4 | 1951.6 | 1941.6 | 1947.1 |
| 35°   | 1897.2 | 1884.9 | 1867.2 | 1858.3 | 1864.9 |
| 37.5° | 1809.4 | 1797.2 | 1781.6 | 1771.6 | 1778.3 |
| 40°   | 1718.3 | 1707.2 | 1692.8 | 1682.8 | 1690.6 |
| 42.5° | 1625.0 | 1618.4 | 1602.8 | 1591.7 | 1599.5 |
| 45°   | 1529.5 | 1521.7 | 1509.5 | 1500.6 | 1506.2 |
| 47.5° | 1432.9 | 1426.2 | 1416.2 | 1406.2 | 1414.0 |
| 50°   | 1335.1 | 1332.9 | 1321.8 | 1312.9 | 1319.6 |
| 52.5° | 1236.3 | 1236.3 | 1226.3 | 1218.5 | 1225.2 |
| 55°   | 1138.5 | 1136.3 | 1130.7 | 1124.1 | 1125.2 |
| 57.5° | 1039.7 | 1039.7 | 1035.2 | 1028.6 | 1034.1 |
| 60°   | 940.8  | 945.2  | 940.8  | 933.0  | 937.5  |
| 62.5° | 843.1  | 848.6  | 846.4  | 837.5  | 841.9  |
| 65°   | 742.0  | 754.2  | 753.1  | 743.1  | 746.4  |
| 67.5° | 650.9  | 660.9  | 659.8  | 650.9  | 653.1  |
| 70°   | 556.5  | 569.8  | 568.7  | 558.7  | 559.8  |
| 72.5° | 461.0  | 481.0  | 479.8  | 468.7  | 468.7  |
| 75°   | 372.1  | 396.5  | 395.4  | 381.0  | 379.9  |
| 77.5° | 292.1  | 313.2  | 311.0  | 295.5  | 295.5  |
| 80°   | 212.2  | 231.0  | 228.8  | 212.2  | 212.2  |
| 82.5° | 141.1  | 157.7  | 153.3  | 140.0  | 142.2  |
| 85°   | 80.0   | 91.1   | 86.6   | 80.0   | 83.3   |
| 87.5° | 28.9   | 35.5   | 34.4   | 28.9   | 32.2   |
| 90°   | 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 | 17.81            | 19.42 | 18.17 | 19.73 | 20.04 | 17.74          | 19.35 | 18.11 | 19.66 | 19.98 |
|                 | 3H   | 19.49            | 20.94 | 19.87 | 21.27 | 21.63 | 19.43          | 20.88 | 19.81 | 21.21 | 21.57 |
|                 | 4H   | 20.09            | 21.45 | 20.49 | 21.80 | 22.17 | 20.04          | 21.40 | 20.44 | 21.75 | 22.13 |
|                 | 6H   | 20.50            | 21.76 | 20.91 | 22.13 | 22.52 | 20.44          | 21.71 | 20.86 | 22.07 | 22.46 |
|                 | 8H   | 20.61            | 21.82 | 21.04 | 22.21 | 22.61 | 20.56          | 21.76 | 20.98 | 22.15 | 22.55 |
|                 | 12H  | 20.68            | 21.83 | 21.11 | 22.21 | 22.64 | 20.62          | 21.78 | 21.05 | 22.16 | 22.59 |
| 4H              | 2H   | 18.41            | 19.77 | 18.81 | 20.12 | 20.50 | 18.35          | 19.72 | 18.75 | 20.07 | 20.44 |
|                 | 3H   | 20.32            | 21.46 | 20.73 | 21.86 | 22.26 | 20.26          | 21.40 | 20.67 | 21.80 | 22.20 |
|                 | 4H   | 21.05            | 22.08 | 21.48 | 22.50 | 22.93 | 20.98          | 22.01 | 21.42 | 22.43 | 22.86 |
|                 | 6H   | 21.59            | 22.49 | 22.05 | 22.93 | 23.39 | 21.50          | 22.40 | 21.96 | 22.84 | 23.30 |
|                 | 8H   | 21.75            | 22.59 | 22.21 | 23.03 | 23.50 | 21.65          | 22.49 | 22.11 | 22.93 | 23.40 |
|                 | 12H  | 21.85            | 22.60 | 22.33 | 23.08 | 23.55 | 21.75          | 22.50 | 22.23 | 22.98 | 23.45 |
| 8H              | 4H   | 21.34            | 22.18 | 21.80 | 22.63 | 23.09 | 21.28          | 22.12 | 21.74 | 22.57 | 23.03 |
|                 | 6H   | 22.00            | 22.70 | 22.49 | 23.19 | 23.66 | 21.90          | 22.60 | 22.40 | 23.09 | 23.56 |
|                 | 8H   | 22.22            | 22.85 | 22.73 | 23.36 | 23.84 | 22.10          | 22.73 | 22.62 | 23.24 | 23.72 |
|                 | 12H  | 22.39            | 22.94 | 22.89 | 23.43 | 23.99 | 22.26          | 22.81 | 22.76 | 23.30 | 23.86 |
| 12H             | 4H   | 21.37            | 22.12 | 21.85 | 22.60 | 23.07 | 21.31          | 22.06 | 21.79 | 22.54 | 23.01 |
|                 | 6H   | 22.04            | 22.67 | 22.55 | 23.18 | 23.66 | 21.95          | 22.58 | 22.46 | 23.08 | 23.57 |
|                 | 8H   | 22.32            | 22.87 | 22.83 | 23.36 | 23.92 | 22.20          | 22.76 | 22.71 | 23.25 | 23.81 |

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

Report Prepared for

Cooper Lighting Solutions

Corelite

Report Number: SP1-2506-458-5

Test Date: 08/26/2025

Luminaire Tested: 22ID2-55-CFR1-L840-U

Data in this report applies to families of products including 22ID2-55-CFR1-L840-U



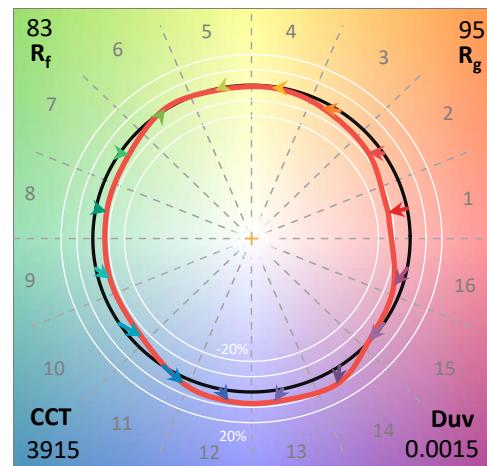
### Test Information

Test Method: LM-79-2019  
 Report Number: SP1-2506-458-5  
 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-L840-U**  
 Description: 2X2 CGTX WITH INDEPTH FRAME AND CFR1 LENS - 5500 LUMEN 4000K 80CRI

### Spectral Parameters

CCT (K): 3915  
 CIE  $u'$ : 0.2259  
 CIE  $v'$ : 0.5051  
 Duv: 0.0015  
 CIE x: 0.3854  
 CIE y: 0.3830  
 CIE z: 0.2316  
 Peak Wavelength (nm): 453  
 Dominant Wavelength (nm): 578  
 Purity: 30.6207  
 R<sub>f</sub>: 83.2  
 R<sub>g</sub>: 94.6

CRI (Ra): 82.3  
 R1: 80.6  
 R2: 88.9  
 R3: 94.6  
 R4: 80.5  
 R5: 80.0  
 R6: 84.0  
 R7: 86.1  
 R8: 64.0  
 R9: 7.6  
 R10: 72.9  
 R11: 78.7  
 R12: 57.3  
 R13: 82.7  
 R14: 97.1  
 R15: 74.3



### Test Conditions

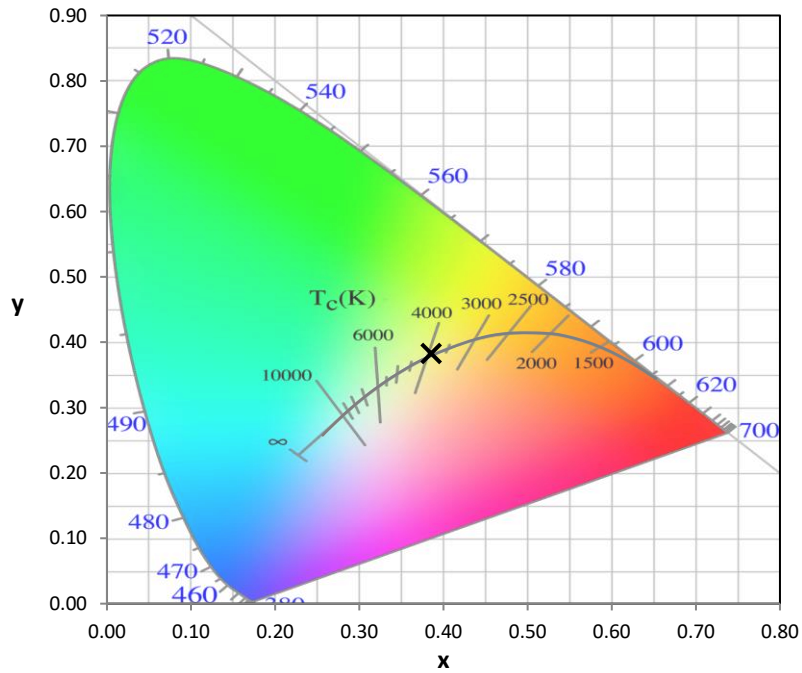
Stabilization Time: 34M  
 Operation Time: 1H 34M  
 Sphere Temperature (°C): 25.2

REPORT NUMBER: SP1-2506-458-5

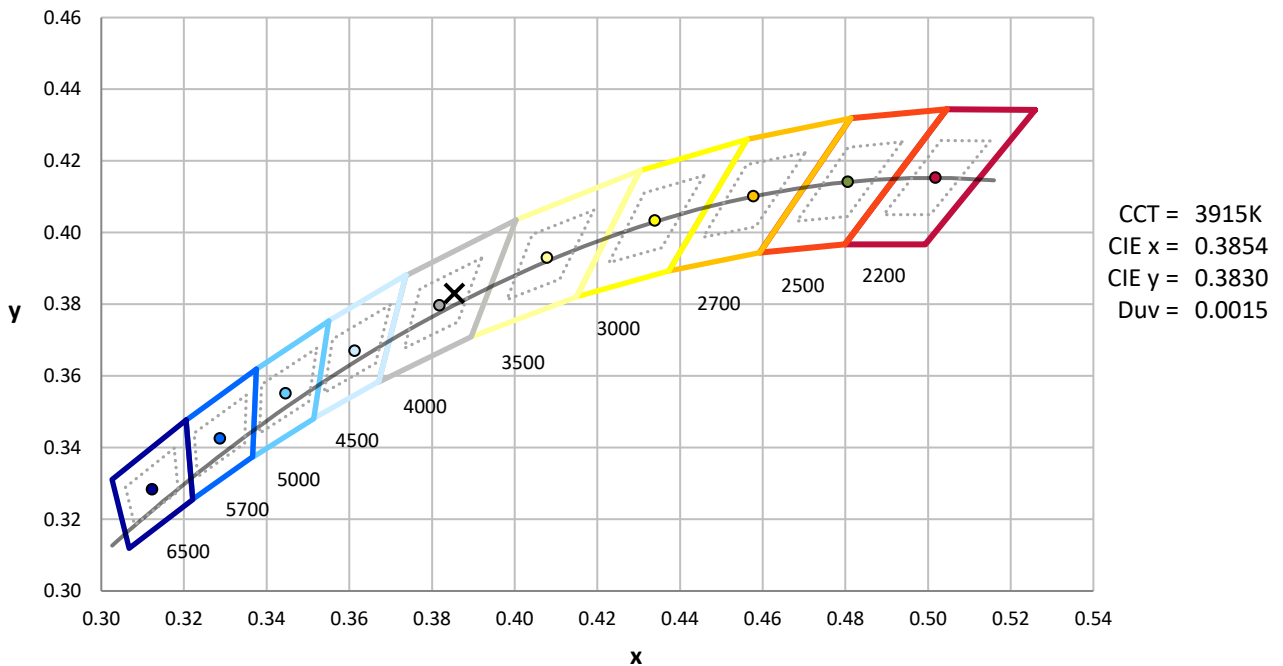
| Measurement and Test Equipment |                       |                  |                      |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument                     | Identification Number | Calibration Date | Calibration Due Date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



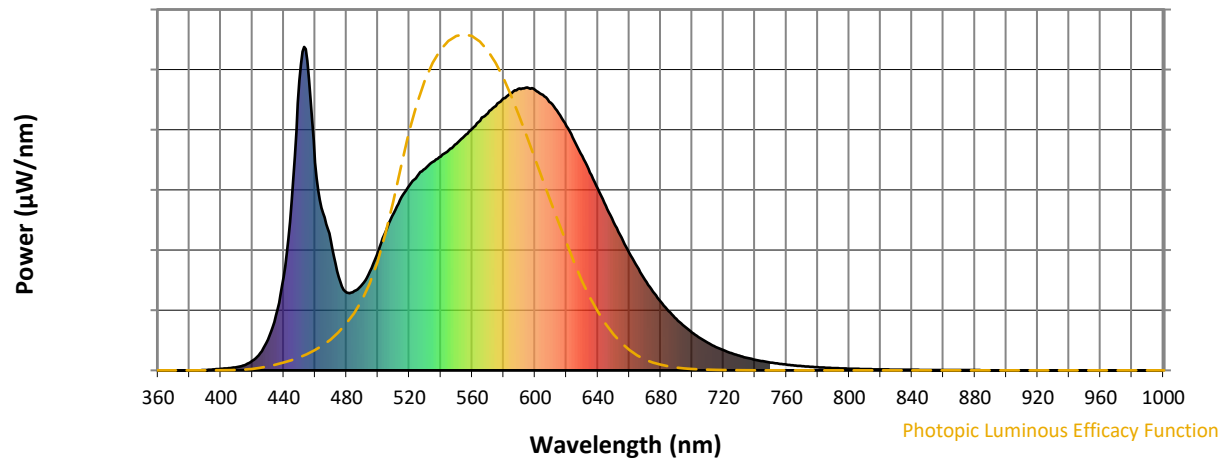
**CIE 1931 Chromaticity Diagram with 2017 ANSI 7-Step and 4-Step Quadrangles**



Point lies inside the ANSI 4000K 4-step quadrangle

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### Photopic Flux vs. Wavelength

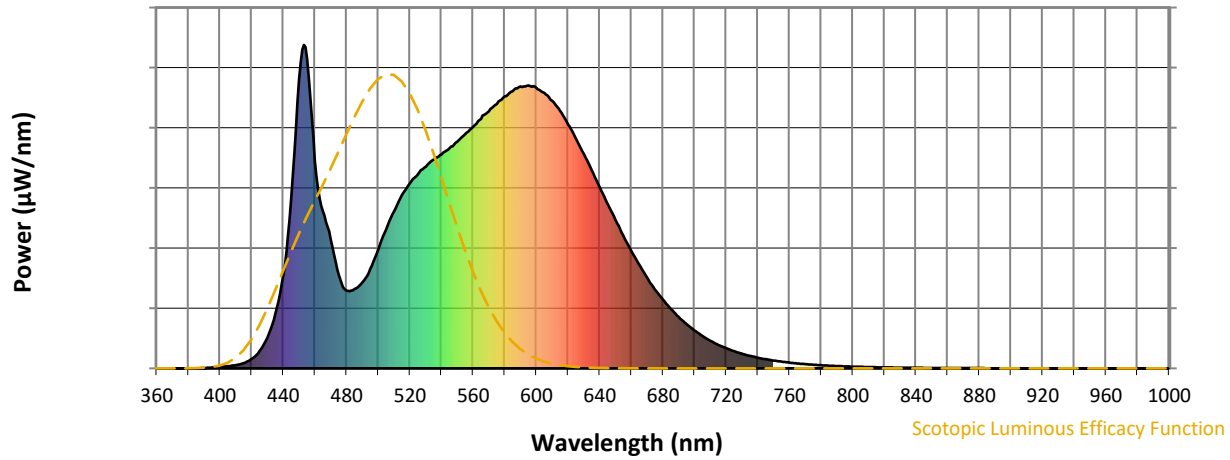


### Photopic Lumens: NR

| $\lambda$<br>(nm) | Power<br>$\text{W}/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) |
|-------------------|-------------------------------|--------------------------------|-------------------|-------------------------------|--------------------------------|-------------------|-------------------------------|--------------------------------|-------------------|-------------------------------|--------------------------------|-------------------|-------------------------------|--------------------------------|
| 360               | 0                             | NR                             | 490               | 266                           | NR                             | 620               | 755                           | NR                             | 750               | 24                            | NR                             | 880               | 1                             | NR                             |
| 365               | 0                             | NR                             | 495               | 307                           | NR                             | 625               | 710                           | NR                             | 755               | 21                            | NR                             | 885               | 0                             | NR                             |
| 370               | 0                             | NR                             | 500               | 366                           | NR                             | 630               | 663                           | NR                             | 760               | 18                            | NR                             | 890               | 0                             | NR                             |
| 375               | 0                             | NR                             | 505               | 430                           | NR                             | 635               | 612                           | NR                             | 765               | 15                            | NR                             | 895               | 0                             | NR                             |
| 380               | 0                             | NR                             | 510               | 486                           | NR                             | 640               | 561                           | NR                             | 770               | 13                            | NR                             | 900               | 0                             | NR                             |
| 385               | 0                             | NR                             | 515               | 536                           | NR                             | 645               | 509                           | NR                             | 775               | 11                            | NR                             | 905               | 0                             | NR                             |
| 390               | 1                             | NR                             | 520               | 571                           | NR                             | 650               | 458                           | NR                             | 780               | 10                            | NR                             | 910               | 0                             | NR                             |
| 395               | 3                             | NR                             | 525               | 600                           | NR                             | 655               | 410                           | NR                             | 785               | 8                             | NR                             | 915               | 0                             | NR                             |
| 400               | 5                             | NR                             | 530               | 624                           | NR                             | 660               | 363                           | NR                             | 790               | 7                             | NR                             | 920               | 0                             | NR                             |
| 405               | 7                             | NR                             | 535               | 645                           | NR                             | 665               | 321                           | NR                             | 795               | 6                             | NR                             | 925               | 0                             | NR                             |
| 410               | 10                            | NR                             | 540               | 661                           | NR                             | 670               | 280                           | NR                             | 800               | 5                             | NR                             | 930               | 0                             | NR                             |
| 415               | 16                            | NR                             | 545               | 681                           | NR                             | 675               | 244                           | NR                             | 805               | 5                             | NR                             | 935               | 0                             | NR                             |
| 420               | 30                            | NR                             | 550               | 701                           | NR                             | 680               | 213                           | NR                             | 810               | 4                             | NR                             | 940               | 0                             | NR                             |
| 425               | 53                            | NR                             | 555               | 724                           | NR                             | 685               | 183                           | NR                             | 815               | 3                             | NR                             | 945               | 0                             | NR                             |
| 430               | 95                            | NR                             | 560               | 747                           | NR                             | 690               | 159                           | NR                             | 820               | 3                             | NR                             | 950               | 0                             | NR                             |
| 435               | 170                           | NR                             | 565               | 772                           | NR                             | 695               | 136                           | NR                             | 825               | 3                             | NR                             | 955               | 0                             | NR                             |
| 440               | 289                           | NR                             | 570               | 795                           | NR                             | 700               | 117                           | NR                             | 830               | 2                             | NR                             | 960               | 0                             | NR                             |
| 445               | 522                           | NR                             | 575               | 817                           | NR                             | 705               | 100                           | NR                             | 835               | 2                             | NR                             | 965               | 0                             | NR                             |
| 450               | 895                           | NR                             | 580               | 841                           | NR                             | 710               | 85                            | NR                             | 840               | 2                             | NR                             | 970               | 0                             | NR                             |
| 455               | 957                           | NR                             | 585               | 857                           | NR                             | 715               | 72                            | NR                             | 845               | 1                             | NR                             | 975               | 0                             | NR                             |
| 460               | 642                           | NR                             | 590               | 871                           | NR                             | 720               | 62                            | NR                             | 850               | 1                             | NR                             | 980               | 0                             | NR                             |
| 465               | 487                           | NR                             | 595               | 875                           | NR                             | 725               | 53                            | NR                             | 855               | 1                             | NR                             | 985               | 0                             | NR                             |
| 470               | 397                           | NR                             | 600               | 866                           | NR                             | 730               | 45                            | NR                             | 860               | 1                             | NR                             | 990               | 0                             | NR                             |
| 475               | 289                           | NR                             | 605               | 852                           | NR                             | 735               | 39                            | NR                             | 865               | 1                             | NR                             | 995               | 0                             | NR                             |
| 480               | 241                           | NR                             | 610               | 827                           | NR                             | 740               | 33                            | NR                             | 870               | 1                             | NR                             | 1000              | 0                             | NR                             |
| 485               | 245                           | NR                             | 615               | 796                           | NR                             | 745               | 28                            | NR                             | 875               | 1                             | NR                             |                   |                               |                                |

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### Scotopic Flux vs. Wavelength



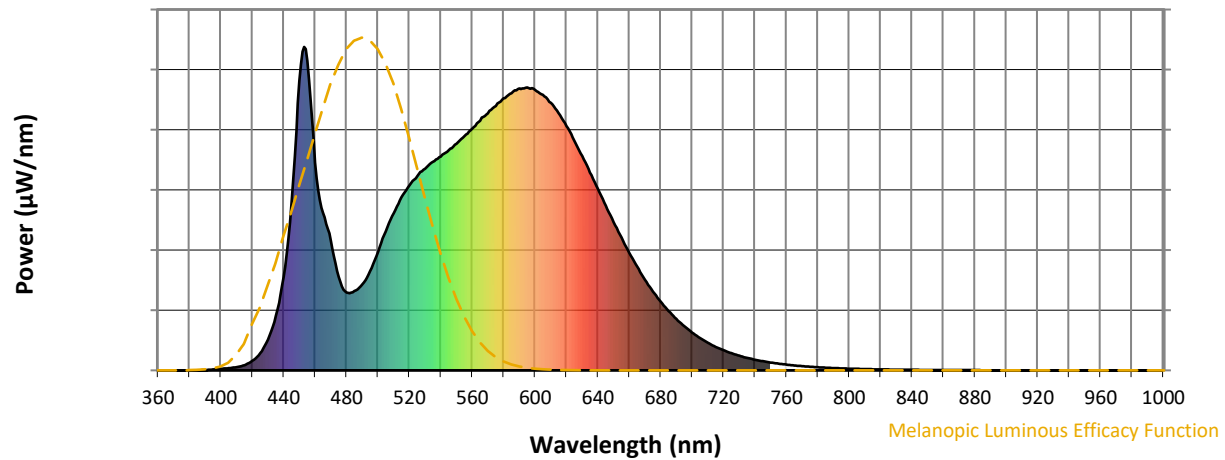
Scotopic Lumens: NR

S/P: 1.65

| 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       | 266                         | NR               | 620       | 755                         | NR               | 750       | 24                          | NR               | 880       | 1                           | NR               |
| 365       | 0                           | NR               | 495       | 307                         | NR               | 625       | 710                         | NR               | 755       | 21                          | NR               | 885       | 0                           | NR               |
| 370       | 0                           | NR               | 500       | 366                         | NR               | 630       | 663                         | NR               | 760       | 18                          | NR               | 890       | 0                           | NR               |
| 375       | 0                           | NR               | 505       | 430                         | NR               | 635       | 612                         | NR               | 765       | 15                          | NR               | 895       | 0                           | NR               |
| 380       | 0                           | NR               | 510       | 486                         | NR               | 640       | 561                         | NR               | 770       | 13                          | NR               | 900       | 0                           | NR               |
| 385       | 0                           | NR               | 515       | 536                         | NR               | 645       | 509                         | NR               | 775       | 11                          | NR               | 905       | 0                           | NR               |
| 390       | 1                           | NR               | 520       | 571                         | NR               | 650       | 458                         | NR               | 780       | 10                          | NR               | 910       | 0                           | NR               |
| 395       | 3                           | NR               | 525       | 600                         | NR               | 655       | 410                         | NR               | 785       | 8                           | NR               | 915       | 0                           | NR               |
| 400       | 5                           | NR               | 530       | 624                         | NR               | 660       | 363                         | NR               | 790       | 7                           | NR               | 920       | 0                           | NR               |
| 405       | 7                           | NR               | 535       | 645                         | NR               | 665       | 321                         | NR               | 795       | 6                           | NR               | 925       | 0                           | NR               |
| 410       | 10                          | NR               | 540       | 661                         | NR               | 670       | 280                         | NR               | 800       | 5                           | NR               | 930       | 0                           | NR               |
| 415       | 16                          | NR               | 545       | 681                         | NR               | 675       | 244                         | NR               | 805       | 5                           | NR               | 935       | 0                           | NR               |
| 420       | 30                          | NR               | 550       | 701                         | NR               | 680       | 213                         | NR               | 810       | 4                           | NR               | 940       | 0                           | NR               |
| 425       | 53                          | NR               | 555       | 724                         | NR               | 685       | 183                         | NR               | 815       | 3                           | NR               | 945       | 0                           | NR               |
| 430       | 95                          | NR               | 560       | 747                         | NR               | 690       | 159                         | NR               | 820       | 3                           | NR               | 950       | 0                           | NR               |
| 435       | 170                         | NR               | 565       | 772                         | NR               | 695       | 136                         | NR               | 825       | 3                           | NR               | 955       | 0                           | NR               |
| 440       | 289                         | NR               | 570       | 795                         | NR               | 700       | 117                         | NR               | 830       | 2                           | NR               | 960       | 0                           | NR               |
| 445       | 522                         | NR               | 575       | 817                         | NR               | 705       | 100                         | NR               | 835       | 2                           | NR               | 965       | 0                           | NR               |
| 450       | 895                         | NR               | 580       | 841                         | NR               | 710       | 85                          | NR               | 840       | 2                           | NR               | 970       | 0                           | NR               |
| 455       | 957                         | NR               | 585       | 857                         | NR               | 715       | 72                          | NR               | 845       | 1                           | NR               | 975       | 0                           | NR               |
| 460       | 642                         | NR               | 590       | 871                         | NR               | 720       | 62                          | NR               | 850       | 1                           | NR               | 980       | 0                           | NR               |
| 465       | 487                         | NR               | 595       | 875                         | NR               | 725       | 53                          | NR               | 855       | 1                           | NR               | 985       | 0                           | NR               |
| 470       | 397                         | NR               | 600       | 866                         | NR               | 730       | 45                          | NR               | 860       | 1                           | NR               | 990       | 0                           | NR               |
| 475       | 289                         | NR               | 605       | 852                         | NR               | 735       | 39                          | NR               | 865       | 1                           | NR               | 995       | 0                           | NR               |
| 480       | 241                         | NR               | 610       | 827                         | NR               | 740       | 33                          | NR               | 870       | 1                           | NR               | 1000      | 0                           | NR               |
| 485       | 245                         | NR               | 615       | 796                         | NR               | 745       | 28                          | NR               | 875       | 1                           | NR               |           |                             |                  |

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### Melanopic Flux vs. Wavelength


**Melanopic Lumens: NR**
**M/P: 3.36**

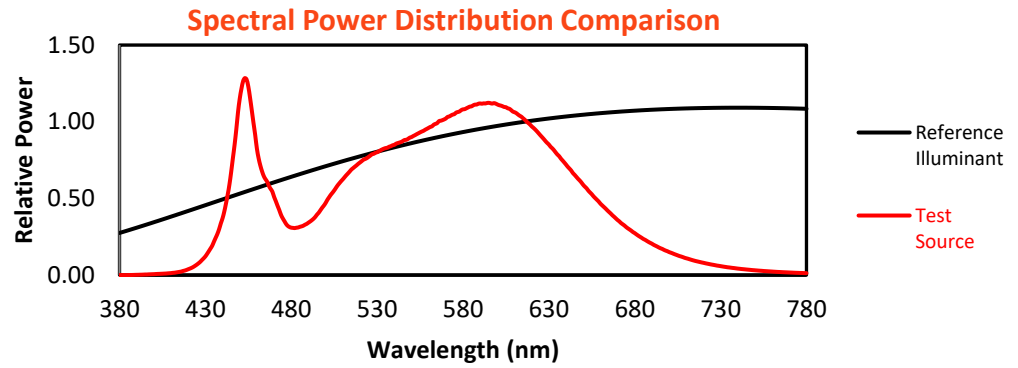
| $\lambda$<br>(nm) | Power<br>$\text{W}^\wedge/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^\wedge/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^\wedge/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<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               | 266                                  | NR                             | 620               | 755                                  | NR                             | 750               | 24                                   | NR                             | 880               | 1                                    | NR                             |
| 365               | 0                                    | NR                             | 495               | 307                                  | NR                             | 625               | 710                                  | NR                             | 755               | 21                                   | NR                             | 885               | 0                                    | NR                             |
| 370               | 0                                    | NR                             | 500               | 366                                  | NR                             | 630               | 663                                  | NR                             | 760               | 18                                   | NR                             | 890               | 0                                    | NR                             |
| 375               | 0                                    | NR                             | 505               | 430                                  | NR                             | 635               | 612                                  | NR                             | 765               | 15                                   | NR                             | 895               | 0                                    | NR                             |
| 380               | 0                                    | NR                             | 510               | 486                                  | NR                             | 640               | 561                                  | NR                             | 770               | 13                                   | NR                             | 900               | 0                                    | NR                             |
| 385               | 0                                    | NR                             | 515               | 536                                  | NR                             | 645               | 509                                  | NR                             | 775               | 11                                   | NR                             | 905               | 0                                    | NR                             |
| 390               | 1                                    | NR                             | 520               | 571                                  | NR                             | 650               | 458                                  | NR                             | 780               | 10                                   | NR                             | 910               | 0                                    | NR                             |
| 395               | 3                                    | NR                             | 525               | 600                                  | NR                             | 655               | 410                                  | NR                             | 785               | 8                                    | NR                             | 915               | 0                                    | NR                             |
| 400               | 5                                    | NR                             | 530               | 624                                  | NR                             | 660               | 363                                  | NR                             | 790               | 7                                    | NR                             | 920               | 0                                    | NR                             |
| 405               | 7                                    | NR                             | 535               | 645                                  | NR                             | 665               | 321                                  | NR                             | 795               | 6                                    | NR                             | 925               | 0                                    | NR                             |
| 410               | 10                                   | NR                             | 540               | 661                                  | NR                             | 670               | 280                                  | NR                             | 800               | 5                                    | NR                             | 930               | 0                                    | NR                             |
| 415               | 16                                   | NR                             | 545               | 681                                  | NR                             | 675               | 244                                  | NR                             | 805               | 5                                    | NR                             | 935               | 0                                    | NR                             |
| 420               | 30                                   | NR                             | 550               | 701                                  | NR                             | 680               | 213                                  | NR                             | 810               | 4                                    | NR                             | 940               | 0                                    | NR                             |
| 425               | 53                                   | NR                             | 555               | 724                                  | NR                             | 685               | 183                                  | NR                             | 815               | 3                                    | NR                             | 945               | 0                                    | NR                             |
| 430               | 95                                   | NR                             | 560               | 747                                  | NR                             | 690               | 159                                  | NR                             | 820               | 3                                    | NR                             | 950               | 0                                    | NR                             |
| 435               | 170                                  | NR                             | 565               | 772                                  | NR                             | 695               | 136                                  | NR                             | 825               | 3                                    | NR                             | 955               | 0                                    | NR                             |
| 440               | 289                                  | NR                             | 570               | 795                                  | NR                             | 700               | 117                                  | NR                             | 830               | 2                                    | NR                             | 960               | 0                                    | NR                             |
| 445               | 522                                  | NR                             | 575               | 817                                  | NR                             | 705               | 100                                  | NR                             | 835               | 2                                    | NR                             | 965               | 0                                    | NR                             |
| 450               | 895                                  | NR                             | 580               | 841                                  | NR                             | 710               | 85                                   | NR                             | 840               | 2                                    | NR                             | 970               | 0                                    | NR                             |
| 455               | 957                                  | NR                             | 585               | 857                                  | NR                             | 715               | 72                                   | NR                             | 845               | 1                                    | NR                             | 975               | 0                                    | NR                             |
| 460               | 642                                  | NR                             | 590               | 871                                  | NR                             | 720               | 62                                   | NR                             | 850               | 1                                    | NR                             | 980               | 0                                    | NR                             |
| 465               | 487                                  | NR                             | 595               | 875                                  | NR                             | 725               | 53                                   | NR                             | 855               | 1                                    | NR                             | 985               | 0                                    | NR                             |
| 470               | 397                                  | NR                             | 600               | 866                                  | NR                             | 730               | 45                                   | NR                             | 860               | 1                                    | NR                             | 990               | 0                                    | NR                             |
| 475               | 289                                  | NR                             | 605               | 852                                  | NR                             | 735               | 39                                   | NR                             | 865               | 1                                    | NR                             | 995               | 0                                    | NR                             |
| 480               | 241                                  | NR                             | 610               | 827                                  | NR                             | 740               | 33                                   | NR                             | 870               | 1                                    | NR                             | 1000              | 0                                    | NR                             |
| 485               | 245                                  | NR                             | 615               | 796                                  | NR                             | 745               | 28                                   | NR                             | 875               | 1                                    | NR                             |                   |                                      |                                |

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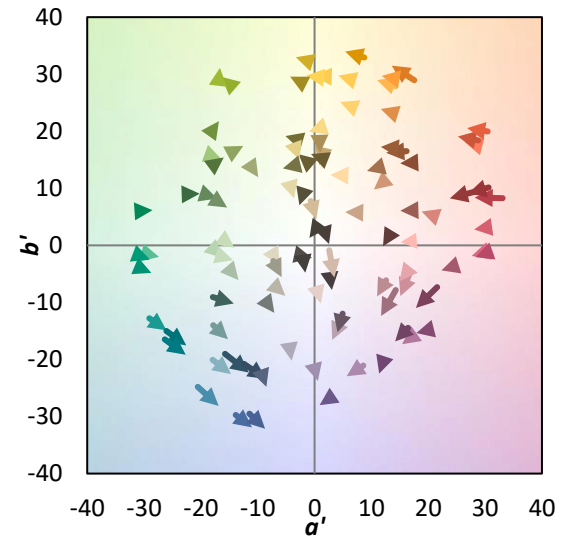
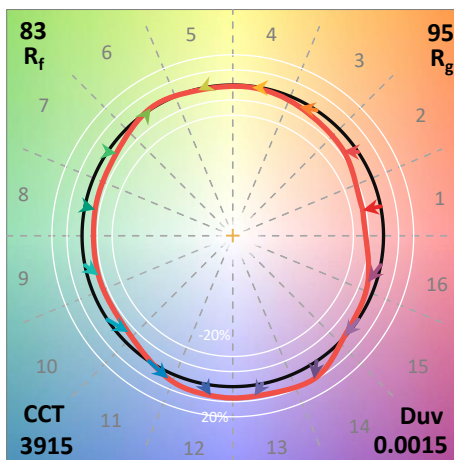
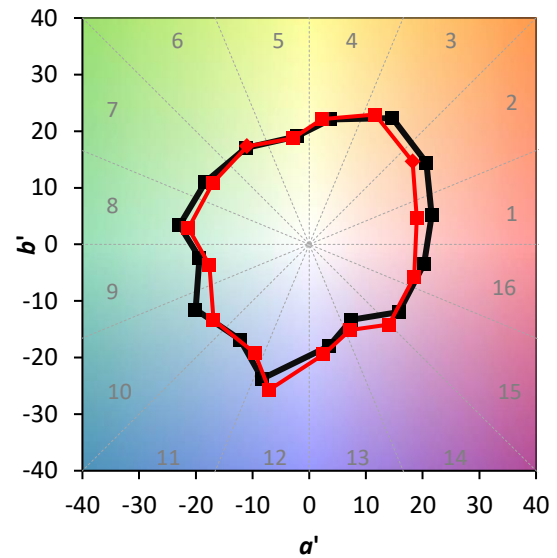
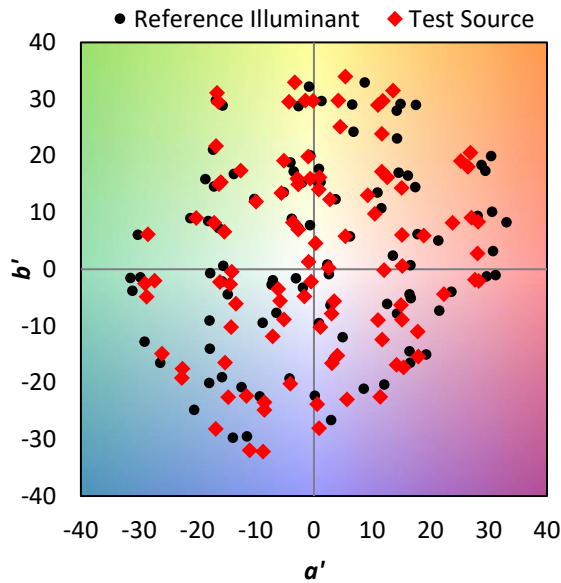
TM-30-18

### Summary

$R_f = 83.2$   
 $R_g = 94.6$   
 $CIE R_a = 82.3$   
 $R_9 = 7.6$

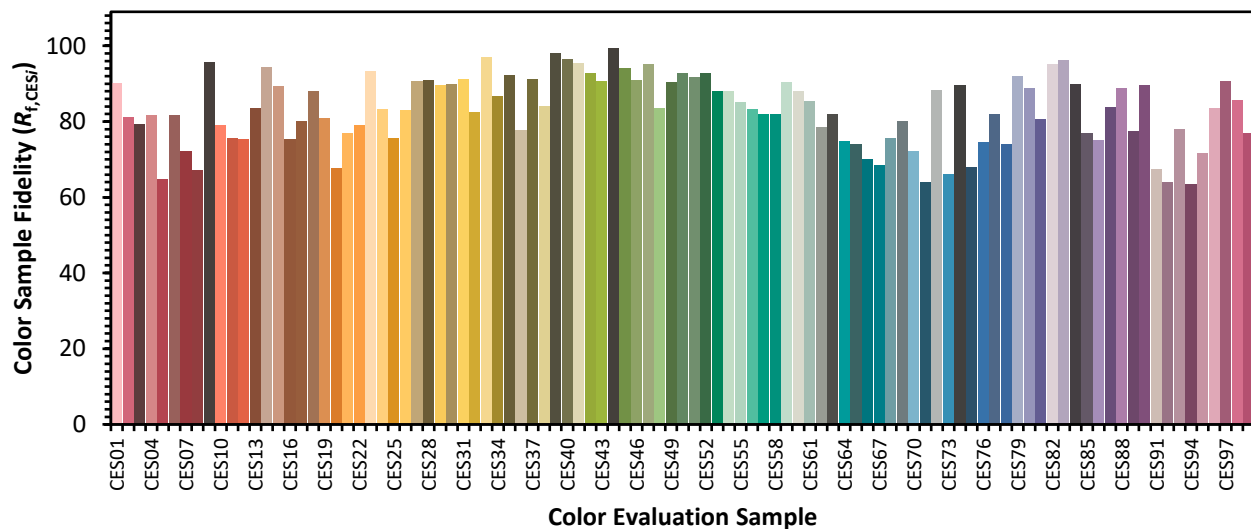


### Color Vector Graphics



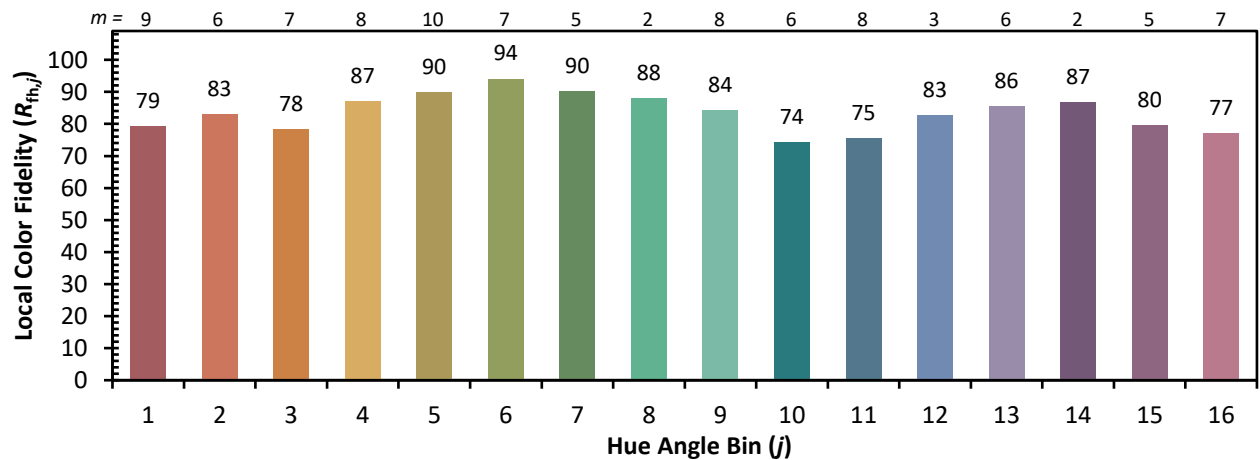
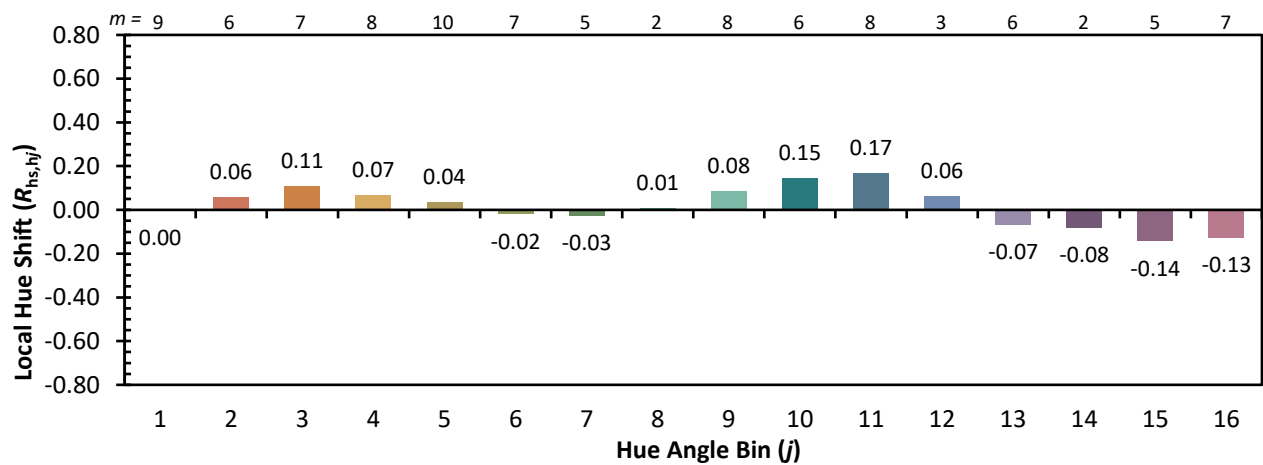
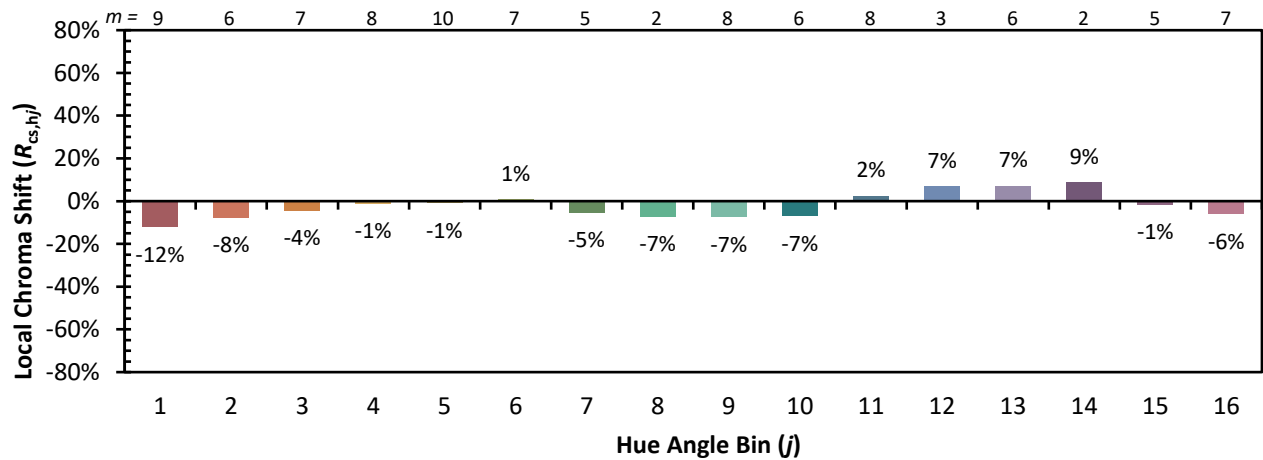
**Individual Sample Fidelity Index ( $R_{f,i}$ )**

|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 86 | CES26 = 83 | CES51 = 92 | CES76 = 75 |
| CES02 = 61 | CES27 = 91 | CES52 = 93 | CES77 = 82 |
| CES03 = 31 | CES28 = 91 | CES53 = 88 | CES78 = 74 |
| CES04 = 70 | CES29 = 90 | CES54 = 88 | CES79 = 92 |
| CES05 = 48 | CES30 = 90 | CES55 = 85 | CES80 = 89 |
| CES06 = 50 | CES31 = 91 | CES56 = 83 | CES81 = 81 |
| CES07 = 41 | CES32 = 83 | CES57 = 82 | CES82 = 95 |
| CES08 = 40 | CES33 = 97 | CES58 = 82 | CES83 = 96 |
| CES09 = 29 | CES34 = 87 | CES59 = 90 | CES84 = 90 |
| CES10 = 74 | CES35 = 92 | CES60 = 88 | CES85 = 77 |
| CES11 = 57 | CES36 = 78 | CES61 = 85 | CES86 = 75 |
| CES12 = 63 | CES37 = 91 | CES62 = 79 | CES87 = 84 |
| CES13 = 42 | CES38 = 84 | CES63 = 82 | CES88 = 89 |
| CES14 = 74 | CES39 = 98 | CES64 = 75 | CES89 = 77 |
| CES15 = 71 | CES40 = 96 | CES65 = 74 | CES90 = 90 |
| CES16 = 47 | CES41 = 95 | CES66 = 70 | CES91 = 67 |
| CES17 = 49 | CES42 = 93 | CES67 = 69 | CES92 = 64 |
| CES18 = 56 | CES43 = 91 | CES68 = 76 | CES93 = 78 |
| CES19 = 71 | CES44 = 99 | CES69 = 80 | CES94 = 63 |
| CES20 = 65 | CES45 = 94 | CES70 = 72 | CES95 = 72 |
| CES21 = 86 | CES46 = 91 | CES71 = 64 | CES96 = 84 |
| CES22 = 78 | CES47 = 95 | CES72 = 88 | CES97 = 91 |
| CES23 = 91 | CES48 = 83 | CES73 = 66 | CES98 = 86 |
| CES24 = 90 | CES49 = 90 | CES74 = 90 | CES99 = 77 |
| CES25 = 71 | CES50 = 93 | CES75 = 68 |            |

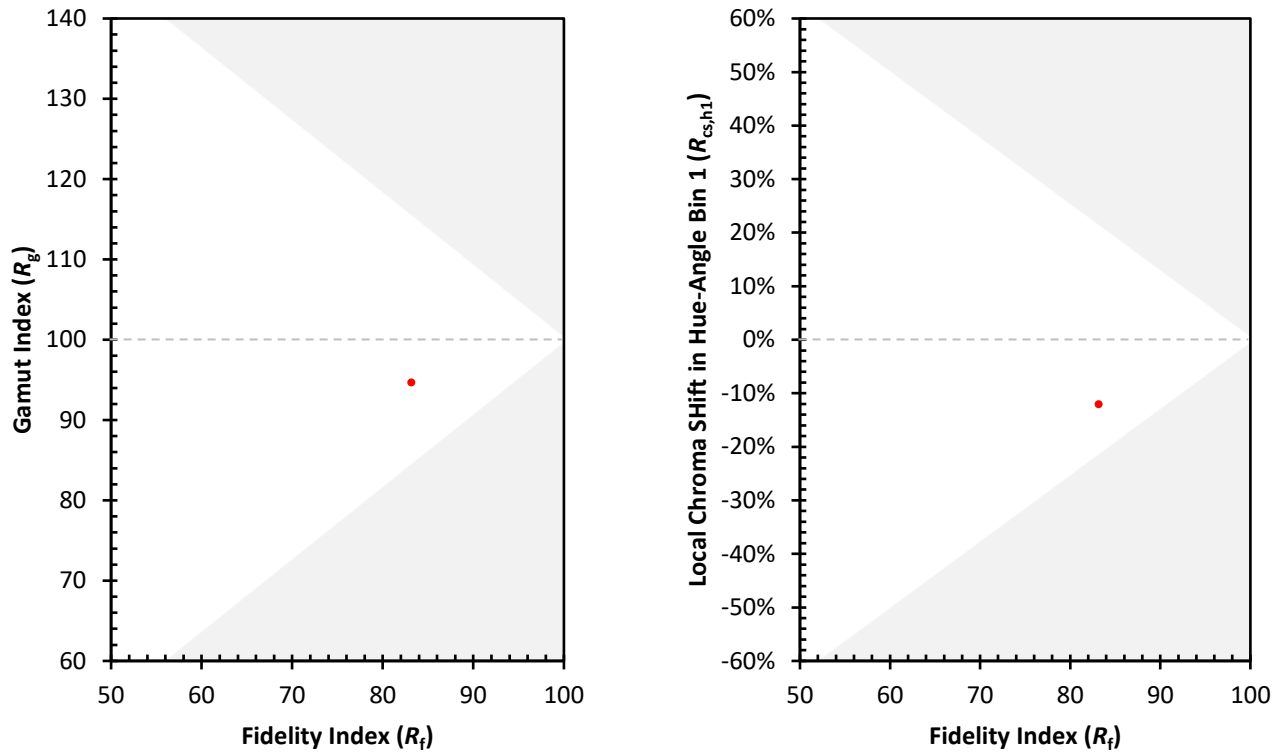




Color Rendition by Hue-Angle Bin



**Measure Comparisons**



(END OF REPORT)