

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: P1216987

Luminaire Tested: 14-ID2-70-CFD1-L950-U

Issue Date: 12/5/2025

**Test Information**

Test Method: LM-79-2019  
Report Number: P1216987  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-2508-507-15)  
Test Lab: INNOVATION CENTER  
Issue Date: 12/5/2025  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: CORELITE  
Catalog Number: 14-ID2-70-CFD1-L950-U  
Description: 1X4 IN DEPTH TROFFER WITH 1INCH CUBE DROP LENS  
Light Source: 5000K CCT, 90 CRI LEDS  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

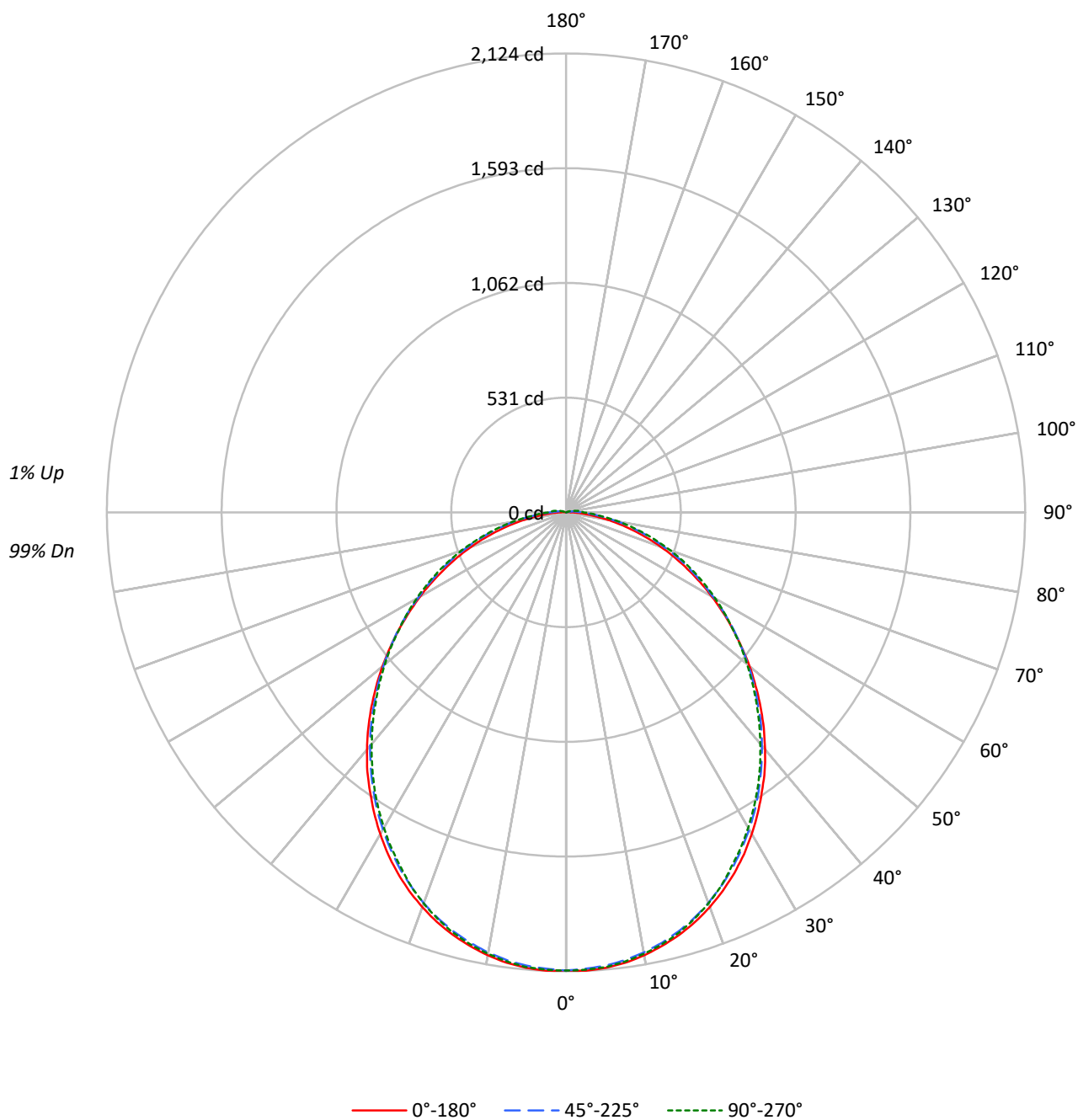
Lumens per Lamp: N/A  
Luminaire Lumens: 5607.9 lumens  
Efficiency: N/A  
Efficacy: 95.0 lumens/watt  
Spacing Criteria (0/90/45): 1.21 / 1.19 / 1.3  
Luminous Opening: Rectangular w/ Sides (W: 1' x L: 4' x H: 0.08')  
CIE Type: Direct

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



TEST NUMBER: P1216987  
CATALOG NUMBER: 14-ID2-70-CFD1-L950-U

### Luminous Intensity Polar Plot



TEST NUMBER: P1216987

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

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |    |    |    |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|----|----|
| RF  | 20  |     |     |     | 20  |     |     |     |     | 20  |     |     |     |     | 20  |     |     |    |    | 20 |
| RC  | 80  |     |     |     | 70  |     |     |     |     | 50  |     |     |     |     | 30  |     |     |    |    | 10 |
| RW  | 70  | 50  | 30  | 10  | 70  | 50  | 30  | 10  | 50  | 30  | 10  | 50  | 30  | 10  | 50  | 30  | 10  | 50 | 30 | 10 |
| RCR |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |    |    |    |
| 0   | 119 | 119 | 119 | 119 | 116 | 116 | 116 | 116 | 111 | 111 | 111 | 106 | 106 | 106 | 101 | 101 | 101 |    |    | 99 |
| 1   | 108 | 104 | 99  | 95  | 106 | 101 | 97  | 94  | 97  | 93  | 90  | 93  | 90  | 88  | 89  | 87  | 85  |    |    | 83 |
| 2   | 99  | 90  | 84  | 78  | 96  | 88  | 82  | 77  | 85  | 79  | 75  | 81  | 77  | 73  | 78  | 74  | 71  |    |    | 69 |
| 3   | 90  | 80  | 71  | 65  | 88  | 78  | 70  | 64  | 75  | 68  | 63  | 72  | 66  | 62  | 69  | 65  | 61  |    |    | 58 |
| 4   | 83  | 71  | 62  | 55  | 80  | 69  | 61  | 55  | 67  | 60  | 54  | 64  | 58  | 53  | 62  | 57  | 52  |    |    | 50 |
| 5   | 76  | 63  | 54  | 48  | 74  | 62  | 54  | 47  | 60  | 52  | 47  | 58  | 51  | 46  | 56  | 50  | 46  |    |    | 44 |
| 6   | 70  | 57  | 48  | 42  | 68  | 56  | 48  | 42  | 54  | 47  | 41  | 52  | 46  | 41  | 51  | 45  | 40  |    |    | 38 |
| 7   | 65  | 52  | 43  | 37  | 64  | 51  | 43  | 37  | 49  | 42  | 37  | 48  | 41  | 36  | 46  | 40  | 36  |    |    | 34 |
| 8   | 61  | 47  | 39  | 33  | 59  | 47  | 39  | 33  | 45  | 38  | 33  | 44  | 37  | 32  | 43  | 37  | 32  |    |    | 30 |
| 9   | 57  | 44  | 35  | 30  | 55  | 43  | 35  | 30  | 42  | 35  | 30  | 41  | 34  | 29  | 39  | 34  | 29  |    |    | 27 |
| 10  | 53  | 40  | 32  | 27  | 52  | 40  | 32  | 27  | 39  | 32  | 27  | 38  | 31  | 27  | 37  | 31  | 27  |    |    | 25 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 5707 | 5707 | 5707 |
| 5°  | 5706 | 5653 | 5666 |
| 10° | 5669 | 5583 | 5589 |
| 15° | 5609 | 5491 | 5496 |
| 20° | 5527 | 5372 | 5360 |
| 25° | 5419 | 5227 | 5181 |
| 30° | 5279 | 5060 | 5006 |
| 35° | 5117 | 4874 | 4814 |
| 40° | 4948 | 4675 | 4603 |
| 45° | 4749 | 4460 | 4388 |
| 50° | 4533 | 4251 | 4179 |
| 55° | 4298 | 4032 | 3960 |
| 60° | 4052 | 3784 | 3771 |
| 65° | 3782 | 3545 | 3556 |
| 70° | 3486 | 3284 | 3313 |
| 75° | 3134 | 2990 | 2994 |
| 80° | 2668 | 2663 | 2658 |
| 85° | 2184 | 2355 | 2376 |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 4749 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 200.2  | 3.6       |
| 10°-20°   | 567.3  | 10.1      |
| 20°-30°   | 838.3  | 14.9      |
| 30°-40°   | 974.6  | 17.4      |
| 40°-50°   | 969.3  | 17.3      |
| 50°-60°   | 843.3  | 15.0      |
| 60°-70°   | 633.1  | 11.3      |
| 70°-80°   | 378.4  | 6.7       |
| 80°-90°   | 146.9  | 2.6       |
| 90°-100°  | 45.3   | 0.8       |
| 100°-110° | 11.0   | 0.2       |
| 110°-120° | 0.2    | 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°    | 1605.8 | 28.6      |
| 0°-40°    | 2580.4 | 46.0      |
| 0°-60°    | 4393.0 | 78.3      |
| 0°-90°    | 5551.4 | 99.0      |
| 90°-120°  | 56.5   | 1.0       |
| 90°-150°  | 56.5   | 1.0       |
| 90°-180°  | 56.0   | 1.0       |
| 0°-180°   | 5607.9 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 2121 | 2121  | 2121 | 2121  | 2121 |      |
| 5°   | 2116 | 2113  | 2106 | 2106  | 2112 | 201  |
| 15°  | 2024 | 2017  | 2008 | 2008  | 2015 | 571  |
| 25°  | 1842 | 1832  | 1818 | 1806  | 1810 | 848  |
| 35°  | 1580 | 1573  | 1557 | 1542  | 1548 | 988  |
| 45°  | 1273 | 1266  | 1255 | 1244  | 1245 | 982  |
| 55°  | 942  | 942   | 946  | 940   | 940  | 843  |
| 65°  | 619  | 628   | 641  | 648   | 654  | 614  |
| 75°  | 324  | 342   | 364  | 373   | 374  | 344  |
| 85°  | 87   | 111   | 138  | 146   | 147  | 93   |
| 90°  | 24   | 43    | 69   | 80    | 81   | 16   |
| 95°  | 16   | 22    | 44   | 58    | 63   | 12   |
| 105° | 3    | 2     | 4    | 19    | 24   | 4    |
| 115° | 0    | 0     | 0    | 0     | 0    | 0    |
| 125° | 0    | 0     | 0    | 0     | 0    | 0    |
| 135° | 0    | 0     | 0    | 0     | 0    | 0    |
| 145° | 0    | 0     | 0    | 0     | 0    | 0    |
| 155° | 0    | 0     | 0    | 0     | 0    | 0    |
| 165° | 0    | 0     | 0    | 0     | 0    | 0    |
| 175° | 0    | 0     | 0    | 0     | 0    | 0    |
| 180° | 0    | 0     | 0    | 0     | 0    | 0    |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 2120.7 | 2120.7 | 2120.7 | 2120.7 | 2120.7 |
| 2.5°   | 2123.5 | 2121.6 | 2114.0 | 2115.9 | 2118.8 |
| 5°     | 2115.9 | 2113.1 | 2105.5 | 2106.5 | 2112.2 |
| 7.5°   | 2102.7 | 2097.0 | 2090.4 | 2091.4 | 2097.0 |
| 10°    | 2081.9 | 2077.2 | 2068.7 | 2069.7 | 2074.4 |
| 12.5°  | 2055.5 | 2049.8 | 2041.3 | 2042.3 | 2048.0 |
| 15°    | 2024.3 | 2016.8 | 2008.3 | 2008.3 | 2014.9 |
| 17.5°  | 1987.5 | 1979.0 | 1969.6 | 1966.8 | 1973.4 |
| 20°    | 1944.1 | 1935.6 | 1924.3 | 1918.6 | 1926.2 |
| 22.5°  | 1895.9 | 1886.5 | 1873.3 | 1864.8 | 1873.3 |
| 25°    | 1842.1 | 1831.7 | 1818.5 | 1806.2 | 1810.0 |
| 27.5°  | 1783.6 | 1773.2 | 1758.1 | 1745.8 | 1750.5 |
| 30°    | 1718.4 | 1709.9 | 1694.8 | 1681.6 | 1685.4 |
| 32.5°  | 1651.4 | 1642.9 | 1627.8 | 1612.7 | 1617.4 |
| 35°    | 1579.6 | 1573.0 | 1557.0 | 1541.9 | 1547.5 |
| 37.5°  | 1509.8 | 1499.4 | 1484.3 | 1468.2 | 1473.9 |
| 40°    | 1432.3 | 1423.8 | 1409.7 | 1392.7 | 1398.3 |
| 42.5°  | 1354.0 | 1346.4 | 1335.1 | 1319.0 | 1322.8 |
| 45°    | 1272.8 | 1266.2 | 1254.8 | 1243.5 | 1245.4 |
| 47.5°  | 1190.6 | 1185.9 | 1179.3 | 1167.0 | 1168.9 |
| 50°    | 1108.5 | 1105.6 | 1100.9 | 1090.5 | 1093.4 |
| 52.5°  | 1024.4 | 1022.6 | 1022.6 | 1014.1 | 1018.8 |
| 55°    | 942.3  | 942.3  | 946.1  | 939.5  | 940.4  |
| 57.5°  | 859.2  | 863.0  | 868.7  | 864.9  | 870.5  |
| 60°    | 779.0  | 781.8  | 789.3  | 792.2  | 797.8  |
| 62.5°  | 698.7  | 705.3  | 714.8  | 719.5  | 725.1  |
| 65°    | 619.4  | 627.9  | 641.1  | 647.7  | 654.3  |
| 67.5°  | 542.9  | 552.4  | 571.2  | 577.8  | 583.5  |
| 70°    | 467.4  | 480.6  | 498.5  | 508.0  | 513.6  |
| 72.5°  | 393.7  | 409.8  | 430.6  | 440.0  | 440.9  |
| 75°    | 323.9  | 341.8  | 363.5  | 373.0  | 373.9  |
| 77.5°  | 256.8  | 273.8  | 299.3  | 308.8  | 308.8  |
| 80°    | 191.7  | 211.5  | 240.8  | 248.3  | 249.3  |
| 82.5°  | 135.0  | 156.7  | 184.1  | 192.6  | 192.6  |
| 85°    | 86.9   | 111.4  | 137.9  | 146.3  | 147.3  |
| 87.5°  | 51.0   | 74.6   | 100.1  | 109.5  | 110.5  |
| 90°    | 23.6   | 43.4   | 68.9   | 80.3   | 81.2   |
| 92.5°  | 19.8   | 33.0   | 56.7   | 68.9   | 71.8   |
| 95°    | 16.1   | 21.7   | 44.4   | 58.5   | 63.3   |
| 97.5°  | 12.3   | 12.3   | 33.0   | 48.2   | 52.9   |
| 100°   | 8.5    | 6.6    | 21.7   | 37.8   | 43.4   |
| 102.5° | 5.7    | 3.8    | 11.3   | 27.4   | 33.0   |
| 105°   | 2.8    | 1.9    | 3.8    | 18.9   | 23.6   |
| 107.5° | 0.9    | 0.0    | 0.0    | 9.4    | 15.1   |
| 110°   | 0.0    | 0.0    | 0.0    | 1.9    | 6.6    |

TEST NUMBER: P1216987

CATALOG NUMBER: 14-ID2-70-CFD1-L950-U

**CANDELA DISTRIBUTION (continued):**

|        | 0°  | 22.5° | 45° | 67.5° | 90° |
|--------|-----|-------|-----|-------|-----|
| 112.5° | 0.0 | 0.0   | 0.0 | 0.0   | 0.0 |
| 115°   | 0.0 | 0.0   | 0.0 | 0.0   | 0.0 |
| 117.5° | 0.0 | 0.0   | 0.0 | 0.0   | 0.0 |
| 120°   | 0.0 | 0.0   | 0.0 | 0.0   | 0.0 |
| 122.5° | 0.0 | 0.0   | 0.0 | 0.0   | 0.0 |
| 125°   | 0.0 | 0.0   | 0.0 | 0.0   | 0.0 |
| 127.5° | 0.0 | 0.0   | 0.0 | 0.0   | 0.0 |
| 130°   | 0.0 | 0.0   | 0.0 | 0.0   | 0.0 |
| 132.5° | 0.0 | 0.0   | 0.0 | 0.0   | 0.0 |
| 135°   | 0.0 | 0.0   | 0.0 | 0.0   | 0.0 |
| 137.5° | 0.0 | 0.0   | 0.0 | 0.0   | 0.0 |
| 140°   | 0.0 | 0.0   | 0.0 | 0.0   | 0.0 |
| 142.5° | 0.0 | 0.0   | 0.0 | 0.0   | 0.0 |
| 145°   | 0.0 | 0.0   | 0.0 | 0.0   | 0.0 |
| 147.5° | 0.0 | 0.0   | 0.0 | 0.0   | 0.0 |
| 150°   | 0.0 | 0.0   | 0.0 | 0.0   | 0.0 |
| 152.5° | 0.0 | 0.0   | 0.0 | 0.0   | 0.0 |
| 155°   | 0.0 | 0.0   | 0.0 | 0.0   | 0.0 |
| 157.5° | 0.0 | 0.0   | 0.0 | 0.0   | 0.0 |
| 160°   | 0.0 | 0.0   | 0.0 | 0.0   | 0.0 |
| 162.5° | 0.0 | 0.0   | 0.0 | 0.0   | 0.0 |
| 165°   | 0.0 | 0.0   | 0.0 | 0.0   | 0.0 |
| 167.5° | 0.0 | 0.0   | 0.0 | 0.0   | 0.0 |
| 170°   | 0.0 | 0.0   | 0.0 | 0.0   | 0.0 |
| 172.5° | 0.0 | 0.0   | 0.0 | 0.0   | 0.0 |
| 175°   | 0.0 | 0.0   | 0.0 | 0.0   | 0.0 |
| 177.5° | 0.0 | 0.0   | 0.0 | 0.0   | 0.0 |
| 180°   | 0.0 | 0.0   | 0.0 | 0.0   | 0.0 |

TEST NUMBER: P1216987

CATALOG NUMBER: 14-ID2-70-CFD1-L950-U

**CIE UGR TABLE:**

| Reflectances:   |      |                  |       |       |       |       |                |       |       |       |       |
|-----------------|------|------------------|-------|-------|-------|-------|----------------|-------|-------|-------|-------|
| Ceiling         |      | 0.7              | 0.7   | 0.5   | 0.5   | 0.3   | 0.7            | 0.7   | 0.5   | 0.5   | 0.3   |
| Wall            |      | 0.5              | 0.3   | 0.5   | 0.3   | 0.3   | 0.5            | 0.3   | 0.5   | 0.3   | 0.3   |
| Reference plane |      | 0.2              | 0.2   | 0.2   | 0.2   | 0.2   | 0.2            | 0.2   | 0.2   | 0.2   | 0.2   |
| Room dimensions |      | Viewed crosswise |       |       |       |       | Viewed endwise |       |       |       |       |
| X=2H            | Y=2H | 16.56            | 18.16 | 16.94 | 18.49 | 18.83 | 16.78          | 18.38 | 17.16 | 18.72 | 19.06 |
|                 | 3H   | 18.17            | 19.61 | 18.56 | 19.96 | 20.35 | 18.64          | 20.08 | 19.03 | 20.43 | 20.82 |
|                 | 4H   | 18.74            | 20.10 | 19.16 | 20.47 | 20.87 | 19.37          | 20.73 | 19.78 | 21.10 | 21.50 |
|                 | 6H   | 19.13            | 20.39 | 19.56 | 20.78 | 21.19 | 19.96          | 21.23 | 20.39 | 21.61 | 22.03 |
|                 | 8H   | 19.24            | 20.44 | 19.68 | 20.85 | 21.28 | 20.19          | 21.40 | 20.63 | 21.81 | 22.23 |
|                 | 12H  | 19.30            | 20.46 | 19.75 | 20.86 | 21.31 | 20.40          | 21.56 | 20.84 | 21.96 | 22.41 |
| 4H              | 2H   | 17.18            | 18.54 | 17.59 | 18.91 | 19.31 | 17.35          | 18.72 | 17.77 | 19.09 | 19.49 |
|                 | 3H   | 19.01            | 20.16 | 19.44 | 20.58 | 21.00 | 19.43          | 20.57 | 19.85 | 20.99 | 21.41 |
|                 | 4H   | 19.71            | 20.75 | 20.16 | 21.18 | 21.64 | 20.29          | 21.33 | 20.74 | 21.76 | 22.22 |
|                 | 6H   | 20.22            | 21.13 | 20.69 | 21.59 | 22.07 | 21.03          | 21.94 | 21.50 | 22.40 | 22.88 |
|                 | 8H   | 20.37            | 21.22 | 20.85 | 21.68 | 22.17 | 21.32          | 22.17 | 21.80 | 22.63 | 23.12 |
|                 | 12H  | 20.48            | 21.24 | 20.97 | 21.74 | 22.23 | 21.59          | 22.36 | 22.09 | 22.85 | 23.35 |
| 8H              | 4H   | 20.06            | 20.91 | 20.53 | 21.37 | 21.86 | 20.57          | 21.42 | 21.04 | 21.88 | 22.37 |
|                 | 6H   | 20.69            | 21.40 | 21.20 | 21.91 | 22.41 | 21.44          | 22.15 | 21.95 | 22.66 | 23.15 |
|                 | 8H   | 20.91            | 21.55 | 21.44 | 22.07 | 22.58 | 21.82          | 22.46 | 22.35 | 22.99 | 23.49 |
|                 | 12H  | 21.09            | 21.65 | 21.61 | 22.16 | 22.74 | 22.21          | 22.78 | 22.73 | 23.28 | 23.87 |
| 12H             | 4H   | 20.11            | 20.87 | 20.60 | 21.37 | 21.86 | 20.59          | 21.36 | 21.09 | 21.85 | 22.35 |
|                 | 6H   | 20.77            | 21.41 | 21.30 | 21.94 | 22.45 | 21.49          | 22.13 | 22.01 | 22.65 | 23.16 |
|                 | 8H   | 21.06            | 21.63 | 21.58 | 22.14 | 22.72 | 21.94          | 22.50 | 22.46 | 23.01 | 23.59 |



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

Report Prepared for

Cooper Lighting Solutions

Corelite

Report Number: SP1-2506-458-13

Test Date: 08/27/2025

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

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

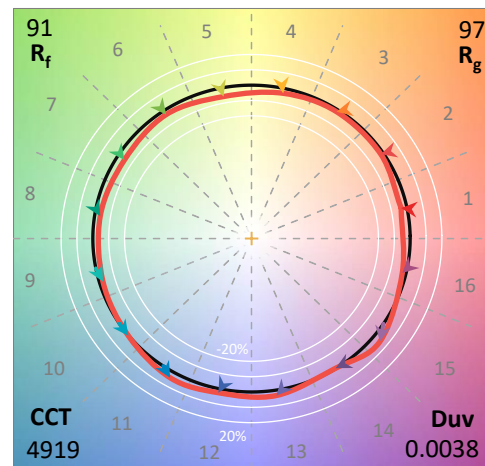
### Test Information

Test Method: LM-79-2019  
 Report Number: SP1-2506-458-13  
 Test Lab: COOPER LIGHTING SOLUTIONS  
 Photometer: SP1 - 76IN SPHERE  
 Measurement Geometry:  $4\pi$   
 Issue Date: 08/27/2025  
 Manufacturer: COOPER LIGHTING SOLUTIONS  
 Product Line: Corelite  
 Catalog Number: **22ID2-55-CFR1-L950-U**  
 Description: 2X2 CGTX WITH INDEPTH FRAME AND CFR1 LENS - 5500 LUMEN 5000K 90CRI

### Spectral Parameters

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

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



### Test Conditions

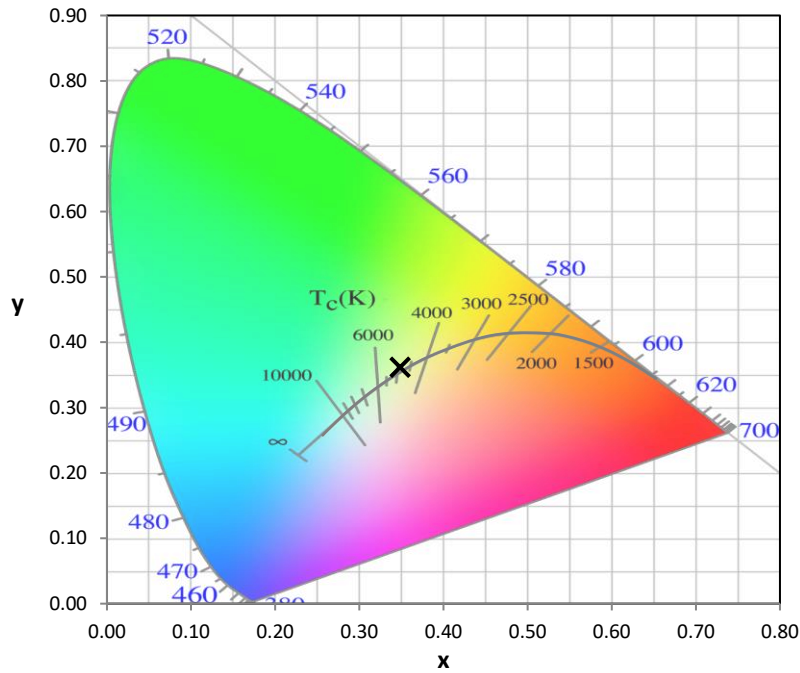
Stabilization Time: M  
 Operation Time: 1H 0M  
 Sphere Temperature (°C): 25.0

REPORT NUMBER: SP1-2506-458-13

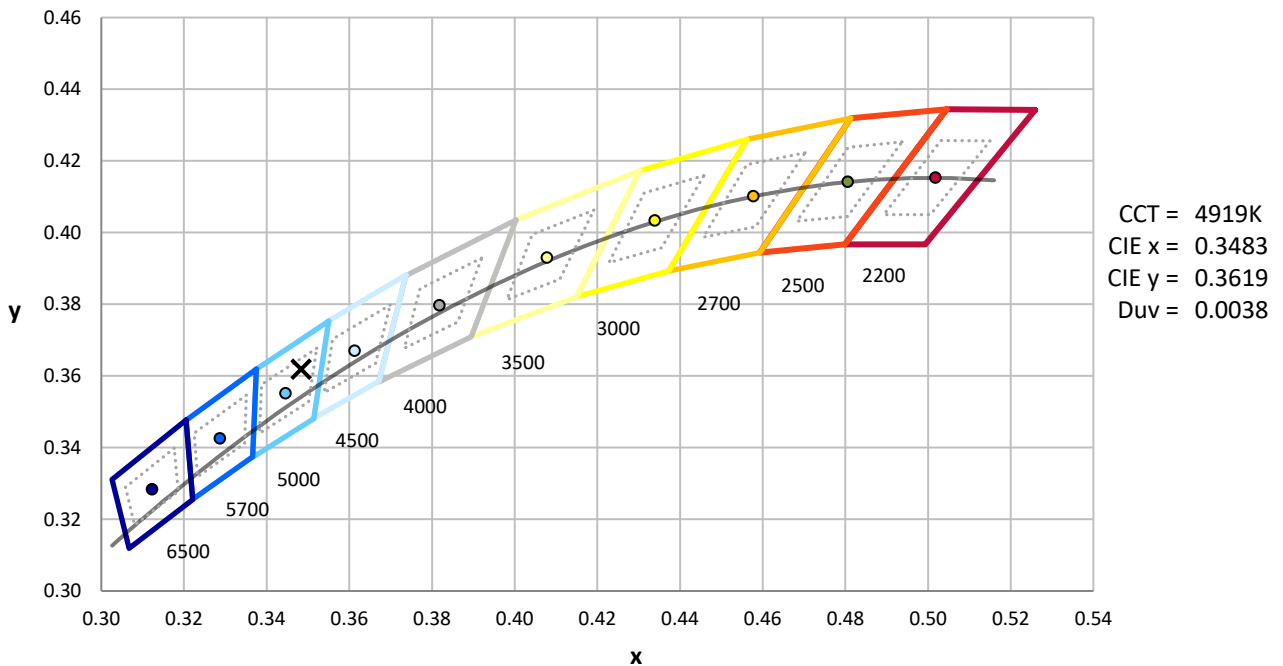
| Measurement and Test Equipment |                       |                  |                      |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument                     | Identification Number | Calibration Date | Calibration Due Date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

REPORT NUMBER: SP1-2506-458-13

**CIE 1931 Chromaticity Diagram**



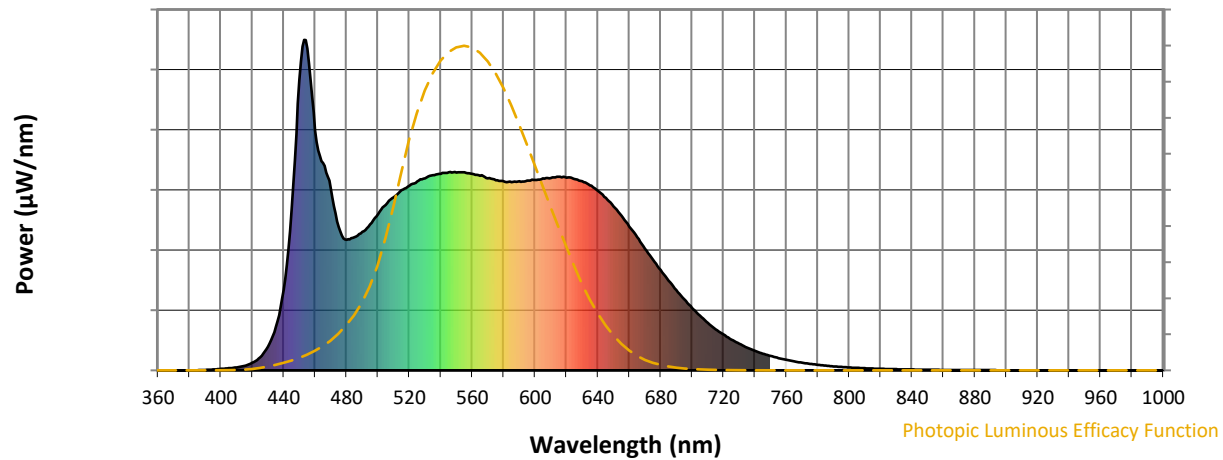
**CIE 1931 Chromaticity Diagram with 2017 ANSI 7-Step and 4-Step Quadrangles**



Point lies inside the ANSI 5000K 4-step quadrangle

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### Photopic Flux vs. Wavelength

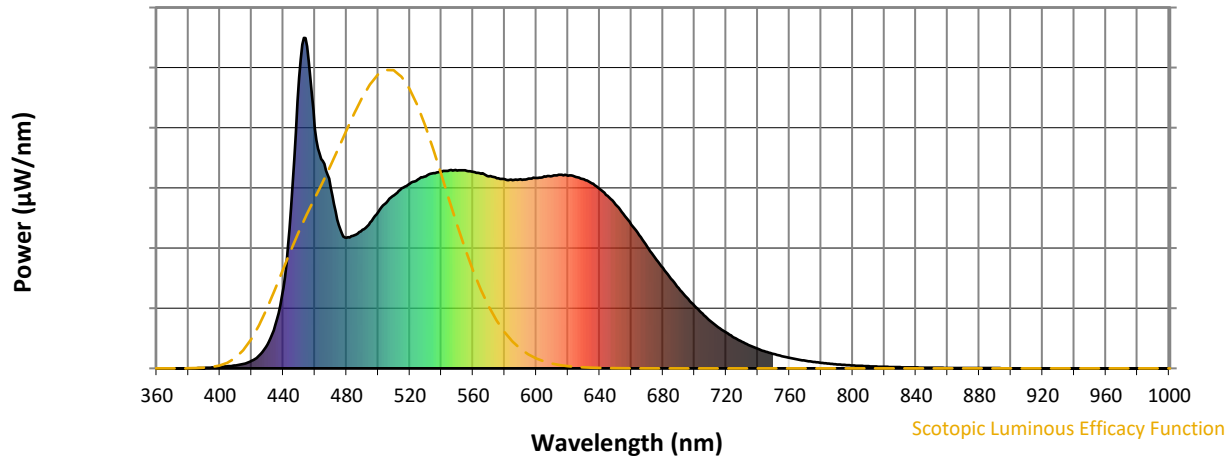


### Photopic Lumens: NR

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

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### Scotopic Flux vs. Wavelength



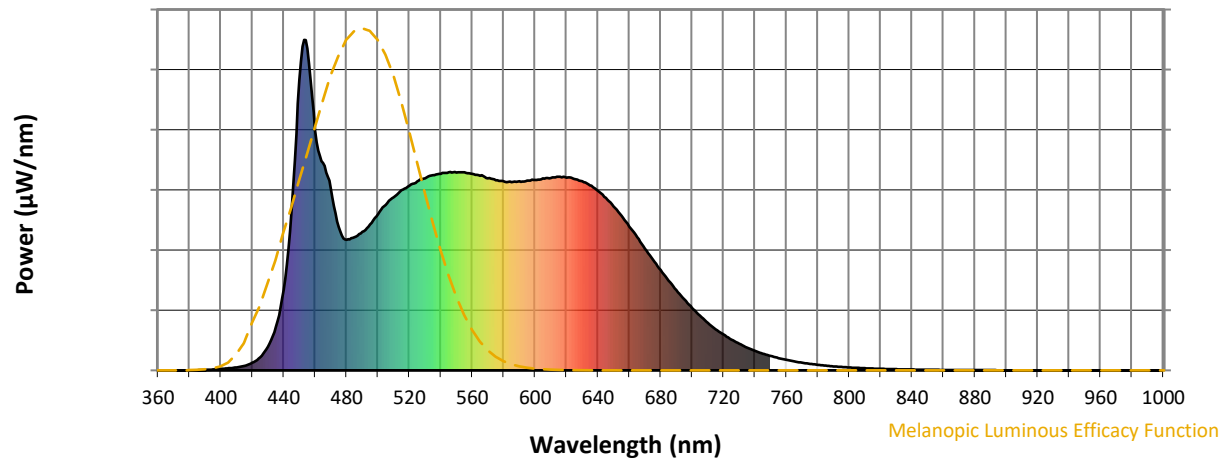
Scotopic Lumens: NR

S/P: 2.09

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

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### Melanopic Flux vs. Wavelength



Melanopic Lumens: NR

M/P: 4.55

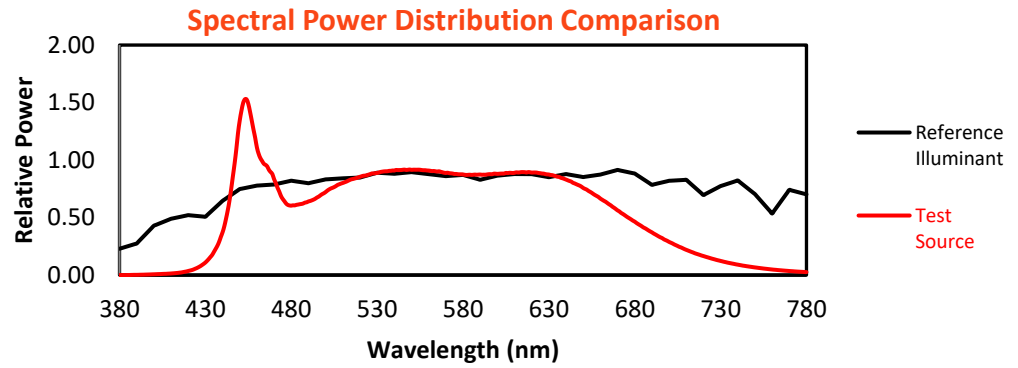
| λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) |
|--------|--------------------------|---------------|--------|--------------------------|-------------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

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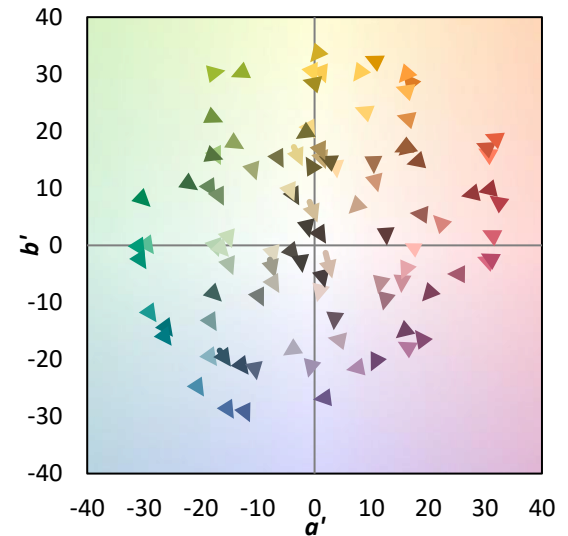
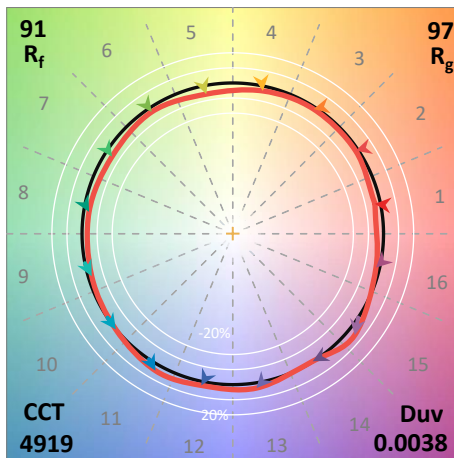
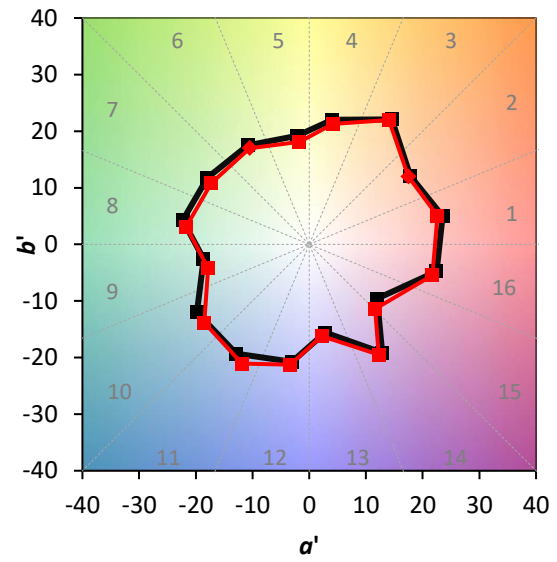
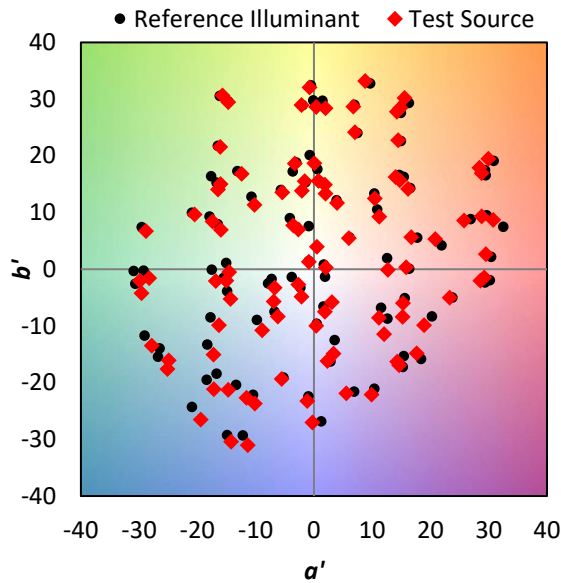
TM-30-18

### Summary

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



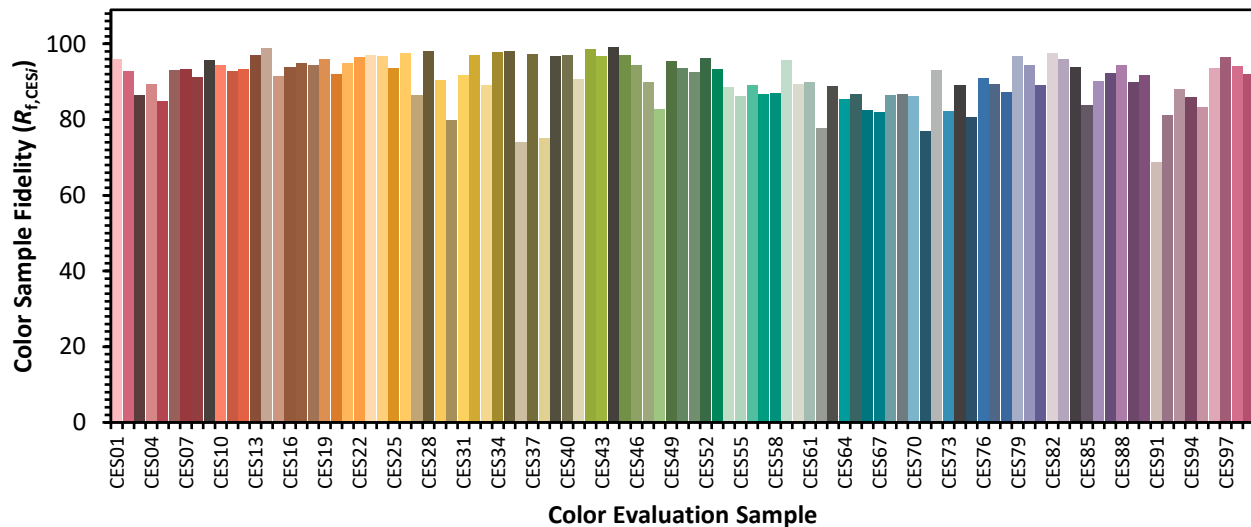
### Color Vector Graphics



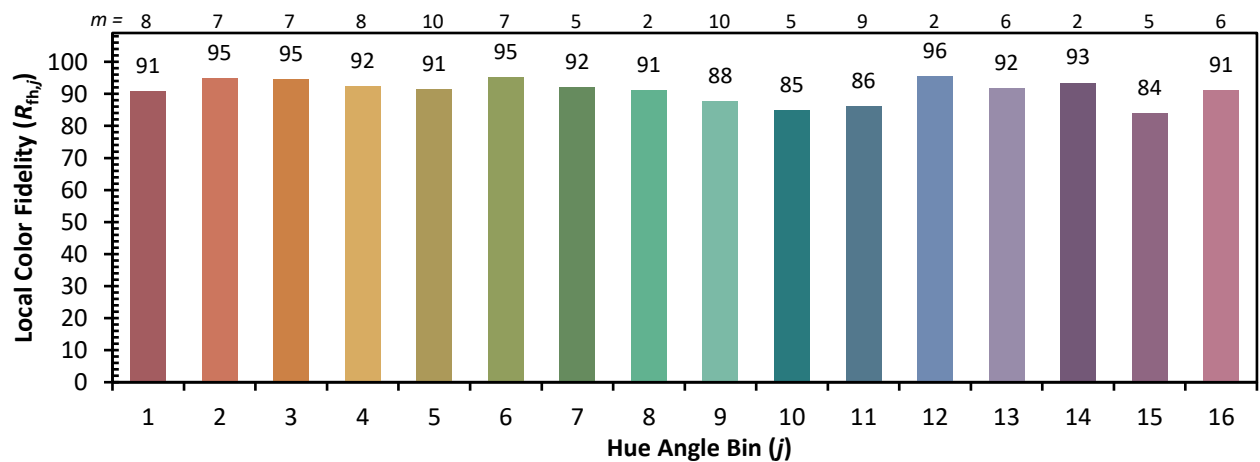
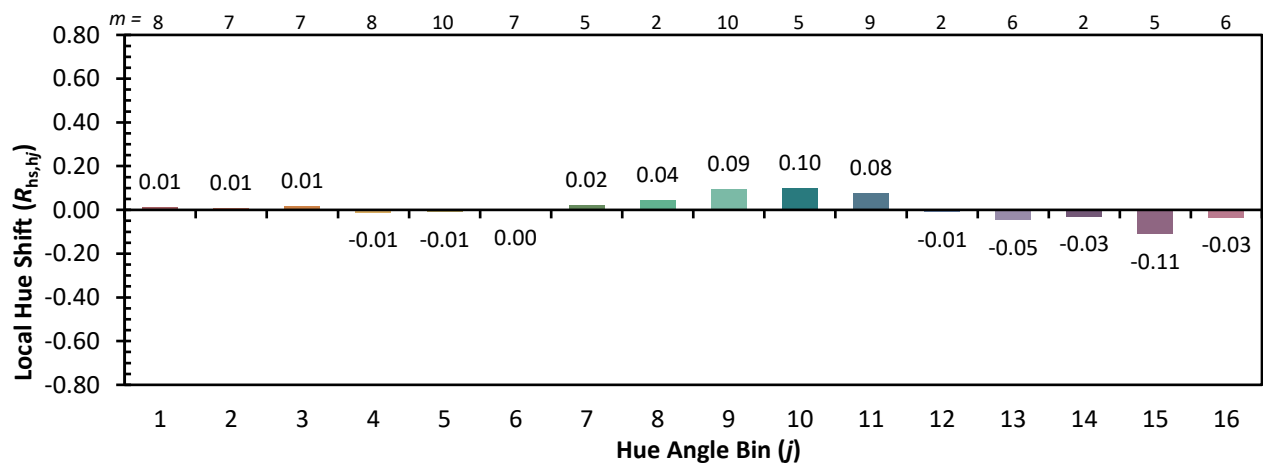
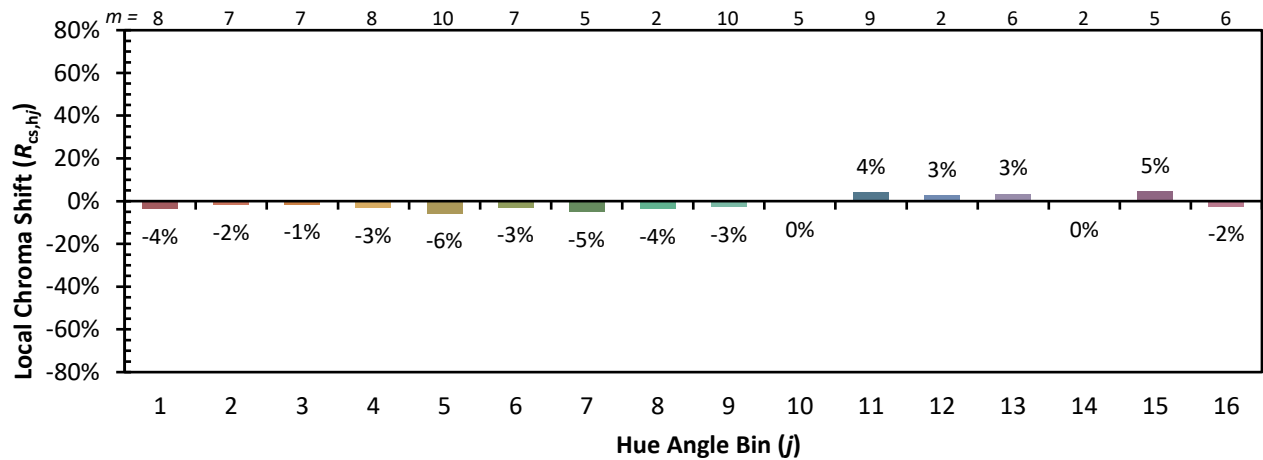


**Individual Sample Fidelity Index ( $R_{f,i}$ )**

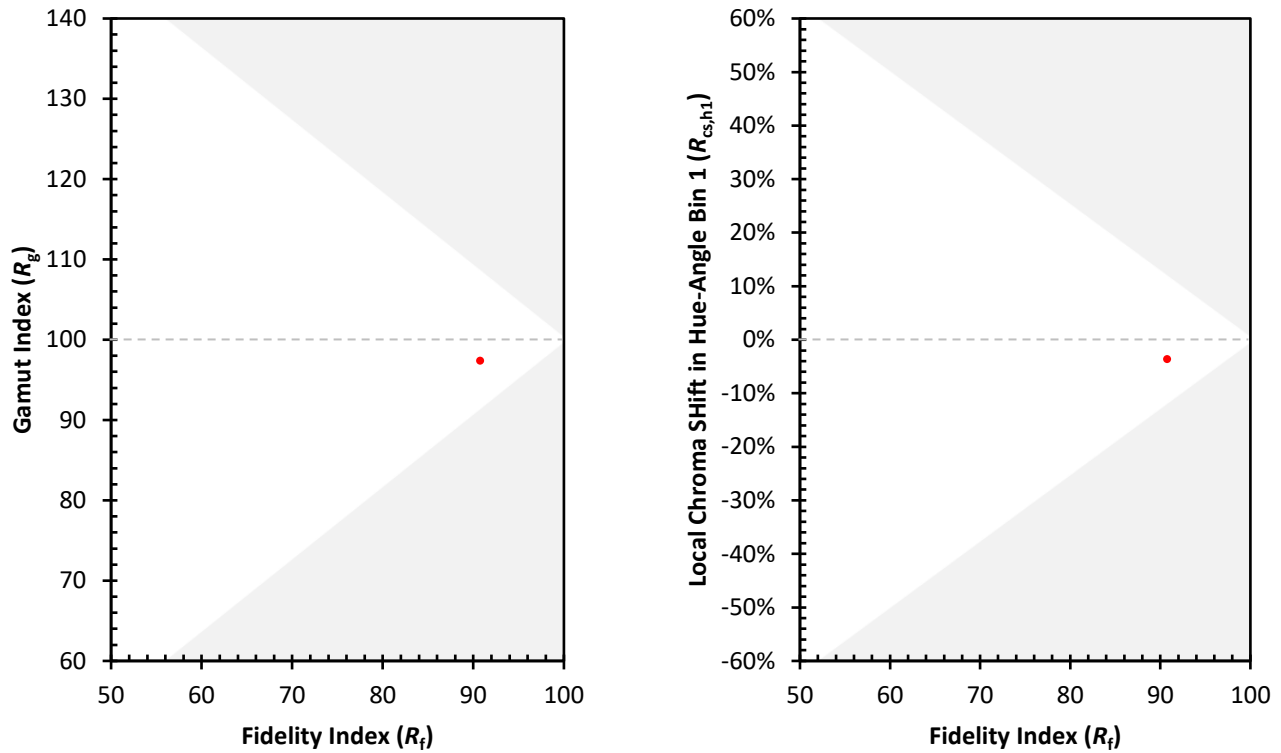
|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 85 | CES26 = 98 | CES51 = 93 | CES76 = 91 |
| CES02 = 61 | CES27 = 86 | CES52 = 96 | CES77 = 89 |
| CES03 = 31 | CES28 = 98 | CES53 = 93 | CES78 = 87 |
| CES04 = 68 | CES29 = 90 | CES54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



Color Rendition by Hue-Angle Bin



**Measure Comparisons**



(END OF REPORT)