

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: P1214743

Luminaire Tested: 22-ID2-30-CFD1-L940-U

Issue Date: 12/4/2025

**Test Information**

Test Method: LM-79-2019  
Report Number: P1214743  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-2506-458-12)  
Test Lab: INNOVATION CENTER  
Issue Date: 12/4/2025  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: CORELITE  
Catalog Number: 22-ID2-30-CFD1-L940-U  
Description: 2X2 IN DEPTH TROFFER WITH 1INCH CUBE DROP LENS  
Light Source: 4000K CCT, 90 CRI LEDS  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

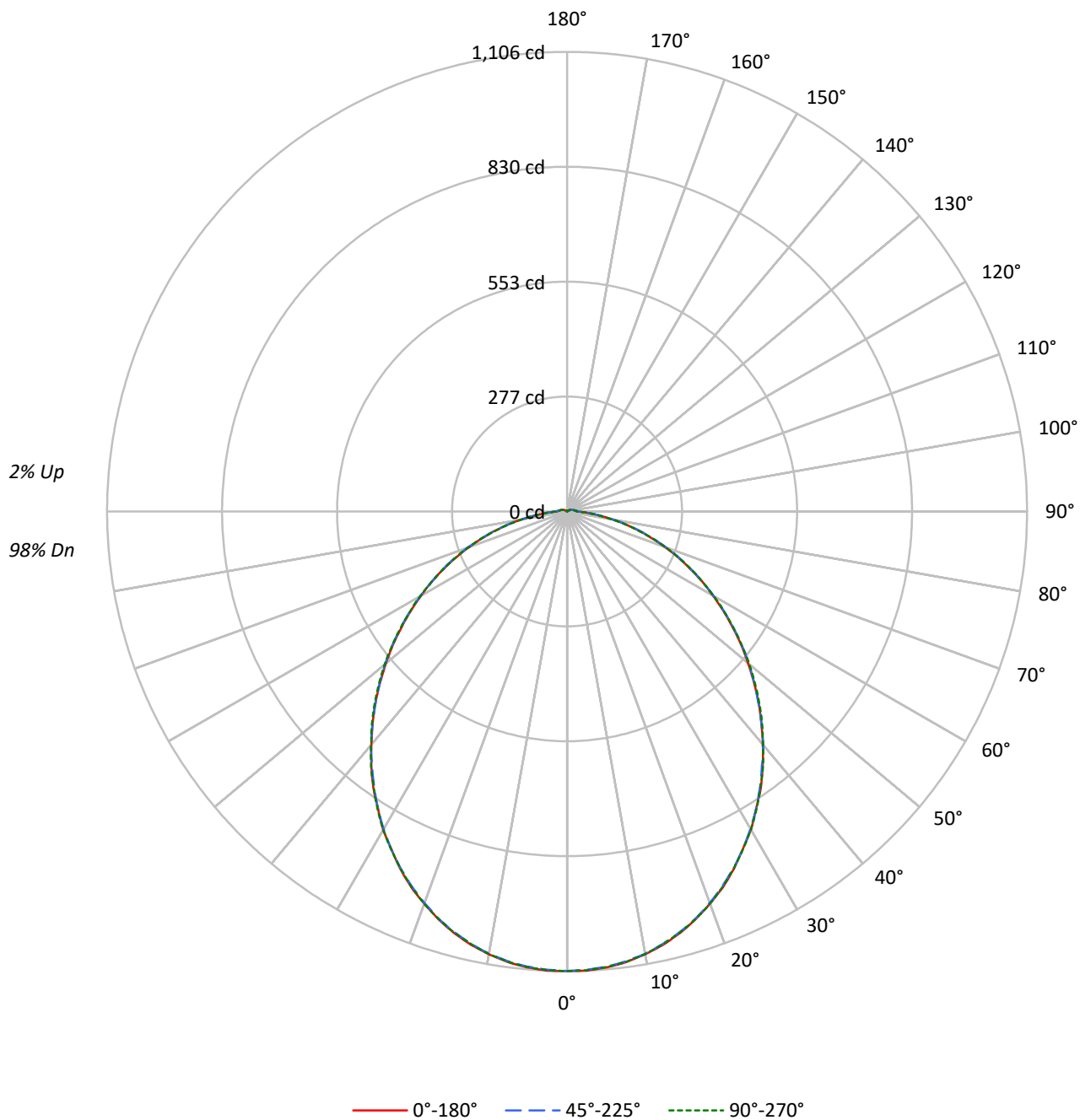
Lumens per Lamp: N/A  
Luminaire Lumens: 2917.1 lumens  
Efficiency: N/A  
Efficacy: 114.4 lumens/watt  
Spacing Criteria (0/90/45): 1.19 / 1.19 / 1.3  
Luminous Opening: Rectangular w/ Sides (W: 2' x L: 2' x H: 0.08')  
CIE Type: Direct

Input Watts (W): 25.5  
Input Voltage (V): 120  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT



TEST NUMBER: P1214743  
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### Luminous Intensity Polar Plot



TEST NUMBER: P1214743

CATALOG NUMBER: 22-ID2-30-CFD1-L940-U

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

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| RF  | 20  |     |     |     | 20  |     |     |     | 20  |     |     |     | 20  |     |     |     | 20  |
| RC  | 80  |     |     |     | 70  |     |     |     | 50  |     |     |     | 30  |     |     |     | 0   |
| RW  | 70  | 50  | 30  | 10  | 70  | 50  | 30  | 10  | 50  | 30  | 10  | 50  | 30  | 10  | 50  | 30  | 10  |
| RCR |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| 0   | 119 | 119 | 119 | 119 | 116 | 116 | 116 | 116 | 110 | 110 | 110 | 105 | 105 | 105 | 100 | 100 | 100 |
| 1   | 108 | 104 | 99  | 95  | 105 | 101 | 97  | 94  | 97  | 93  | 90  | 92  | 90  | 87  | 89  | 86  | 84  |
| 2   | 99  | 91  | 84  | 78  | 96  | 88  | 82  | 77  | 85  | 79  | 75  | 81  | 77  | 73  | 78  | 74  | 71  |
| 3   | 90  | 80  | 72  | 65  | 88  | 78  | 71  | 64  | 75  | 68  | 63  | 72  | 66  | 62  | 69  | 64  | 61  |
| 4   | 83  | 71  | 62  | 55  | 80  | 69  | 61  | 55  | 67  | 60  | 54  | 64  | 58  | 53  | 62  | 57  | 52  |
| 5   | 76  | 63  | 55  | 48  | 74  | 62  | 54  | 48  | 60  | 53  | 47  | 58  | 51  | 46  | 56  | 50  | 46  |
| 6   | 70  | 57  | 48  | 42  | 68  | 56  | 48  | 42  | 54  | 47  | 41  | 52  | 46  | 41  | 51  | 45  | 40  |
| 7   | 65  | 52  | 43  | 37  | 64  | 51  | 43  | 37  | 49  | 42  | 37  | 48  | 41  | 36  | 46  | 40  | 36  |
| 8   | 61  | 48  | 39  | 33  | 59  | 47  | 39  | 33  | 45  | 38  | 33  | 44  | 37  | 33  | 43  | 37  | 32  |
| 9   | 57  | 44  | 36  | 30  | 55  | 43  | 35  | 30  | 42  | 35  | 30  | 41  | 34  | 29  | 39  | 34  | 29  |
| 10  | 53  | 40  | 33  | 27  | 52  | 40  | 32  | 27  | 39  | 32  | 27  | 38  | 31  | 27  | 37  | 31  | 27  |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 2976 | 2976 | 2976 |
| 5°  | 2964 | 2955 | 2962 |
| 10° | 2936 | 2924 | 2934 |
| 15° | 2894 | 2876 | 2891 |
| 20° | 2835 | 2813 | 2836 |
| 25° | 2766 | 2739 | 2763 |
| 30° | 2686 | 2654 | 2685 |
| 35° | 2596 | 2556 | 2590 |
| 40° | 2488 | 2461 | 2490 |
| 45° | 2385 | 2343 | 2394 |
| 50° | 2270 | 2238 | 2286 |
| 55° | 2157 | 2119 | 2168 |
| 60° | 2038 | 1996 | 2052 |
| 65° | 1915 | 1869 | 1931 |
| 70° | 1774 | 1727 | 1785 |
| 75° | 1621 | 1551 | 1599 |
| 80° | 1403 | 1325 | 1384 |
| 85° | 1218 | 1127 | 1165 |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 90°

Vertical Angle: 45°

Luminance: 2394 cd/sqm

TEST NUMBER: P1214743  
 CATALOG NUMBER: 22-ID2-30-CFD1-L940-U

**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 104.4  | 3.6       |
| 10°-20°   | 295.5  | 10.1      |
| 20°-30°   | 436.2  | 15.0      |
| 30°-40°   | 506.5  | 17.4      |
| 40°-50°   | 503.0  | 17.2      |
| 50°-60°   | 436.9  | 15.0      |
| 60°-70°   | 325.8  | 11.2      |
| 70°-80°   | 190.8  | 6.5       |
| 80°-90°   | 68.2   | 2.3       |
| 90°-100°  | 23.3   | 0.8       |
| 100°-110° | 14.4   | 0.5       |
| 110°-120° | 7.6    | 0.3       |
| 120°-130° | 3.3    | 0.1       |
| 130°-140° | 0.9    | 0.0       |
| 140°-150° | 0.2    | 0.0       |
| 150°-160° | 0.0    | 0.0       |
| 160°-170° | 0.0    | 0.0       |
| 170°-180° | 0.0    | 0.0       |
| 0°-30°    | 836.1  | 28.7      |
| 0°-40°    | 1342.6 | 46.0      |
| 0°-60°    | 2282.6 | 78.2      |
| 0°-90°    | 2867.4 | 98.3      |
| 90°-120°  | 45.3   | 1.6       |
| 90°-150°  | 49.7   | 1.7       |
| 90°-180°  | 50.0   | 1.7       |
| 0°-180°   | 2917.1 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 1106 | 1106  | 1106 | 1106  | 1106 |      |
| 5°   | 1101 | 1100  | 1099 | 1099  | 1100 | 105  |
| 15°  | 1050 | 1049  | 1048 | 1048  | 1049 | 296  |
| 25°  | 949  | 948   | 947  | 948   | 948  | 437  |
| 35°  | 812  | 810   | 809  | 810   | 810  | 507  |
| 45°  | 652  | 652   | 651  | 653   | 654  | 502  |
| 55°  | 486  | 488   | 488  | 489   | 489  | 435  |
| 65°  | 327  | 330   | 329  | 329   | 329  | 324  |
| 75°  | 179  | 180   | 181  | 180   | 177  | 189  |
| 85°  | 58   | 59    | 60   | 58    | 55   | 58   |
| 90°  | 25   | 26    | 27   | 26    | 24   | 15   |
| 95°  | 20   | 21    | 22   | 21    | 20   | 16   |
| 105° | 14   | 14    | 14   | 13    | 14   | 15   |
| 115° | 8    | 7     | 7    | 7     | 8    | 9    |
| 125° | 4    | 4     | 3    | 4     | 4    | 4    |
| 135° | 2    | 1     | 0    | 1     | 2    | 1    |
| 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    |      |

TEST NUMBER: P1214743

CATALOG NUMBER: 22-ID2-30-CFD1-L940-U

**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 1105.9 | 1105.9 | 1105.9 | 1105.9 | 1105.9 |
| 2.5°   | 1106.2 | 1104.8 | 1103.7 | 1103.7 | 1104.8 |
| 5°     | 1101.1 | 1100.4 | 1099.3 | 1098.9 | 1100.4 |
| 7.5°   | 1093.8 | 1092.7 | 1091.6 | 1091.6 | 1093.0 |
| 10°    | 1082.0 | 1081.3 | 1080.6 | 1080.9 | 1081.3 |
| 12.5°  | 1068.1 | 1066.6 | 1065.9 | 1065.9 | 1066.3 |
| 15°    | 1050.1 | 1049.0 | 1047.9 | 1048.3 | 1049.0 |
| 17.5°  | 1028.9 | 1028.5 | 1027.4 | 1027.8 | 1028.2 |
| 20°    | 1004.3 | 1003.6 | 1002.5 | 1003.2 | 1004.7 |
| 22.5°  | 979.0  | 976.8  | 976.1  | 976.5  | 977.6  |
| 25°    | 949.0  | 948.2  | 946.8  | 947.5  | 947.9  |
| 27.5°  | 915.3  | 917.8  | 916.0  | 915.6  | 916.4  |
| 30°    | 884.5  | 882.3  | 881.9  | 881.9  | 884.1  |
| 32.5°  | 846.3  | 846.3  | 846.7  | 847.1  | 848.5  |
| 35°    | 812.3  | 809.7  | 809.0  | 810.1  | 810.4  |
| 37.5°  | 773.0  | 772.7  | 770.1  | 772.3  | 774.1  |
| 40°    | 732.0  | 731.6  | 733.8  | 732.4  | 732.7  |
| 42.5°  | 691.7  | 692.0  | 691.7  | 693.5  | 694.6  |
| 45°    | 651.7  | 652.1  | 650.6  | 652.8  | 654.3  |
| 47.5°  | 609.6  | 611.0  | 610.3  | 611.0  | 613.2  |
| 50°    | 568.1  | 570.0  | 570.7  | 570.7  | 572.2  |
| 52.5°  | 527.5  | 528.9  | 530.0  | 530.4  | 530.0  |
| 55°    | 486.0  | 488.2  | 488.2  | 489.0  | 488.6  |
| 57.5°  | 445.7  | 448.3  | 447.9  | 448.3  | 447.5  |
| 60°    | 405.0  | 406.9  | 407.2  | 408.0  | 407.6  |
| 62.5°  | 366.9  | 367.6  | 368.0  | 368.0  | 366.5  |
| 65°    | 326.6  | 329.5  | 329.2  | 328.8  | 329.2  |
| 67.5°  | 288.5  | 290.3  | 291.8  | 290.7  | 290.3  |
| 70°    | 250.3  | 253.6  | 253.6  | 253.3  | 251.8  |
| 72.5°  | 213.0  | 215.9  | 215.9  | 215.9  | 215.5  |
| 75°    | 179.2  | 180.3  | 180.7  | 180.3  | 176.7  |
| 77.5°  | 144.1  | 145.2  | 146.6  | 146.3  | 143.3  |
| 80°    | 111.1  | 113.3  | 112.9  | 112.5  | 109.6  |
| 82.5°  | 81.4   | 83.9   | 84.7   | 83.6   | 81.4   |
| 85°    | 57.5   | 59.4   | 60.1   | 58.3   | 55.0   |
| 87.5°  | 38.1   | 40.0   | 40.3   | 39.6   | 37.4   |
| 90°    | 24.6   | 26.4   | 27.1   | 26.4   | 23.8   |
| 92.5°  | 22.4   | 23.5   | 24.2   | 23.5   | 21.6   |
| 95°    | 20.5   | 21.3   | 22.0   | 21.3   | 20.2   |
| 97.5°  | 18.7   | 19.1   | 19.8   | 19.1   | 18.3   |
| 100°   | 17.2   | 16.9   | 17.6   | 16.9   | 16.9   |
| 102.5° | 15.4   | 15.0   | 15.8   | 15.0   | 15.4   |
| 105°   | 13.9   | 13.6   | 13.9   | 13.2   | 13.6   |
| 107.5° | 12.5   | 11.7   | 12.1   | 11.4   | 12.5   |
| 110°   | 11.0   | 10.3   | 10.3   | 9.5    | 11.0   |

TEST NUMBER: P1214743

CATALOG NUMBER: 22-ID2-30-CFD1-L940-U

**CANDELA DISTRIBUTION (continued):**

|        | 0°  | 22.5° | 45° | 67.5° | 90° |
|--------|-----|-------|-----|-------|-----|
| 112.5° | 9.9 | 8.8   | 8.8 | 8.4   | 9.5 |
| 115°   | 8.4 | 7.3   | 7.3 | 7.0   | 8.4 |
| 117.5° | 7.3 | 6.2   | 5.9 | 6.2   | 7.3 |
| 120°   | 6.2 | 5.1   | 4.8 | 5.1   | 6.2 |
| 122.5° | 5.5 | 4.4   | 3.7 | 4.4   | 5.5 |
| 125°   | 4.4 | 3.7   | 2.6 | 3.7   | 4.4 |
| 127.5° | 3.7 | 2.6   | 1.5 | 2.9   | 3.7 |
| 130°   | 2.9 | 2.2   | 1.1 | 2.6   | 2.9 |
| 132.5° | 2.2 | 1.5   | 0.4 | 1.8   | 2.6 |
| 135°   | 1.5 | 1.1   | 0.4 | 1.1   | 1.8 |
| 137.5° | 1.1 | 0.7   | 0.4 | 0.7   | 1.5 |
| 140°   | 0.7 | 0.4   | 0.4 | 0.4   | 0.7 |
| 142.5° | 0.4 | 0.4   | 0.4 | 0.4   | 0.4 |
| 145°   | 0.4 | 0.4   | 0.4 | 0.4   | 0.4 |
| 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 |

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**CIE UGR TABLE:**

| Reflectances:   |      |                  |       |       |       |       |                |       |       |       |       |
|-----------------|------|------------------|-------|-------|-------|-------|----------------|-------|-------|-------|-------|
| Ceiling         |      | 0.7              | 0.7   | 0.5   | 0.5   | 0.3   | 0.7            | 0.7   | 0.5   | 0.5   | 0.3   |
| Wall            |      | 0.5              | 0.3   | 0.5   | 0.3   | 0.3   | 0.5            | 0.3   | 0.5   | 0.3   | 0.3   |
| Reference plane |      | 0.2              | 0.2   | 0.2   | 0.2   | 0.2   | 0.2            | 0.2   | 0.2   | 0.2   | 0.2   |
| Room dimensions |      | Viewed crosswise |       |       |       |       | Viewed endwise |       |       |       |       |
| X=2H            | Y=2H | 14.42            | 15.99 | 14.81 | 16.34 | 16.70 | 14.42          | 16.00 | 14.82 | 16.35 | 16.71 |
|                 | 3H   | 16.13            | 17.55 | 16.53 | 17.91 | 18.32 | 16.14          | 17.56 | 16.54 | 17.93 | 18.33 |
|                 | 4H   | 16.77            | 18.11 | 17.19 | 18.49 | 18.91 | 16.77          | 18.12 | 17.20 | 18.50 | 18.92 |
|                 | 6H   | 17.24            | 18.49 | 17.68 | 18.88 | 19.32 | 17.24          | 18.49 | 17.68 | 18.89 | 19.32 |
|                 | 8H   | 17.40            | 18.58 | 17.85 | 19.01 | 19.45 | 17.40          | 18.58 | 17.85 | 19.01 | 19.45 |
|                 | 12H  | 17.51            | 18.65 | 17.97 | 19.07 | 19.54 | 17.51          | 18.64 | 17.96 | 19.06 | 19.53 |
| 4H              | 2H   | 15.00            | 16.35 | 15.43 | 16.73 | 17.15 | 15.01          | 16.35 | 15.44 | 16.73 | 17.15 |
|                 | 3H   | 16.93            | 18.06 | 17.37 | 18.49 | 18.93 | 16.94          | 18.07 | 17.38 | 18.50 | 18.94 |
|                 | 4H   | 17.70            | 18.72 | 18.16 | 19.17 | 19.65 | 17.71          | 18.73 | 18.17 | 19.17 | 19.65 |
|                 | 6H   | 18.30            | 19.20 | 18.78 | 19.67 | 20.16 | 18.30          | 19.19 | 18.78 | 19.67 | 20.16 |
|                 | 8H   | 18.51            | 19.34 | 19.00 | 19.82 | 20.32 | 18.50          | 19.34 | 18.99 | 19.81 | 20.32 |
|                 | 12H  | 18.67            | 19.43 | 19.18 | 19.93 | 20.44 | 18.66          | 19.41 | 19.17 | 19.92 | 20.43 |
| 8H              | 4H   | 17.99            | 18.83 | 18.48 | 19.30 | 19.81 | 18.00          | 18.83 | 18.49 | 19.31 | 19.81 |
|                 | 6H   | 18.71            | 19.41 | 19.23 | 19.93 | 20.44 | 18.71          | 19.41 | 19.23 | 19.93 | 20.44 |
|                 | 8H   | 18.99            | 19.62 | 19.53 | 20.16 | 20.68 | 18.99          | 19.62 | 19.53 | 20.15 | 20.68 |
|                 | 12H  | 19.24            | 19.80 | 19.78 | 20.32 | 20.92 | 19.23          | 19.78 | 19.76 | 20.30 | 20.90 |
| 12H             | 4H   | 18.02            | 18.77 | 18.53 | 19.28 | 19.79 | 18.03          | 18.78 | 18.54 | 19.29 | 19.80 |
|                 | 6H   | 18.77            | 19.39 | 19.30 | 19.93 | 20.45 | 18.76          | 19.39 | 19.30 | 19.93 | 20.45 |
|                 | 8H   | 19.11            | 19.66 | 19.64 | 20.18 | 20.78 | 19.10          | 19.66 | 19.64 | 20.18 | 20.78 |



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

Report Prepared for

Cooper Lighting Solutions

Corelite

Report Number: SP1-2506-458-11

Test Date: 08/26/2025

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

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

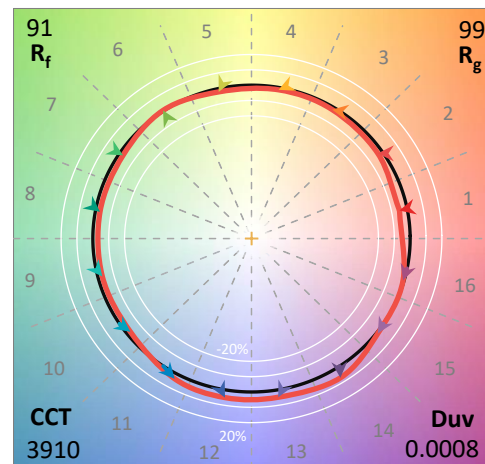
### Test Information

Test Method: LM-79-2019  
 Report Number: SP1-2506-458-11  
 Test Lab: COOPER LIGHTING SOLUTIONS  
 Photometer: SP1 - 76IN SPHERE  
 Measurement Geometry:  $4\pi$   
 Issue Date: 08/27/2025  
 Manufacturer: COOPER LIGHTING SOLUTIONS  
 Product Line: Corelite  
 Catalog Number: **22ID2-55-CFR1-L940-U**  
 Description: 2X2 CGTX WITH INDEPTH FRAME AND CFR1 LENS - 5500 LUMEN 4000K 90CRI

### Spectral Parameters

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

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



### Test Conditions

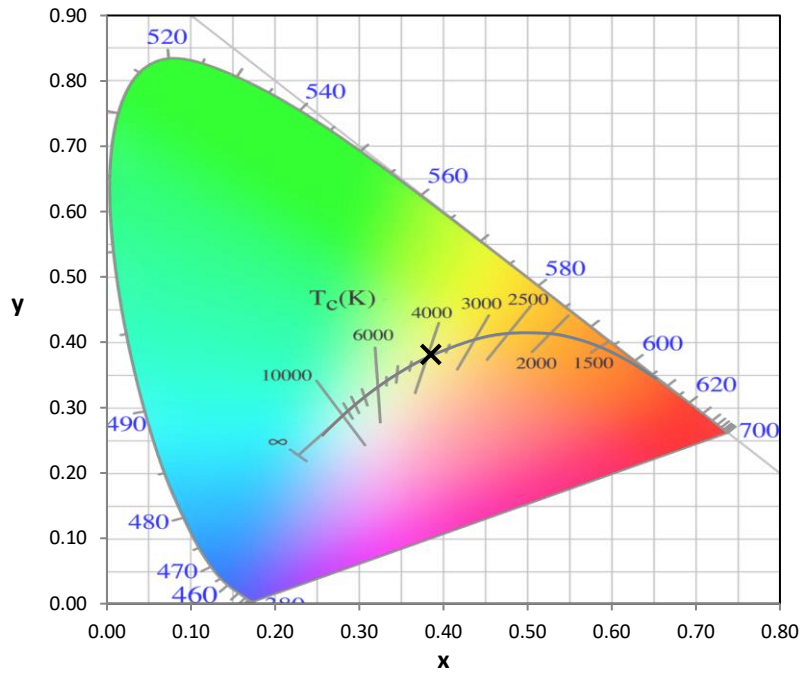
Stabilization Time: 31M  
 Operation Time: 1H 31M  
 Sphere Temperature (°C): 25.2.

REPORT NUMBER: SP1-2506-458-11

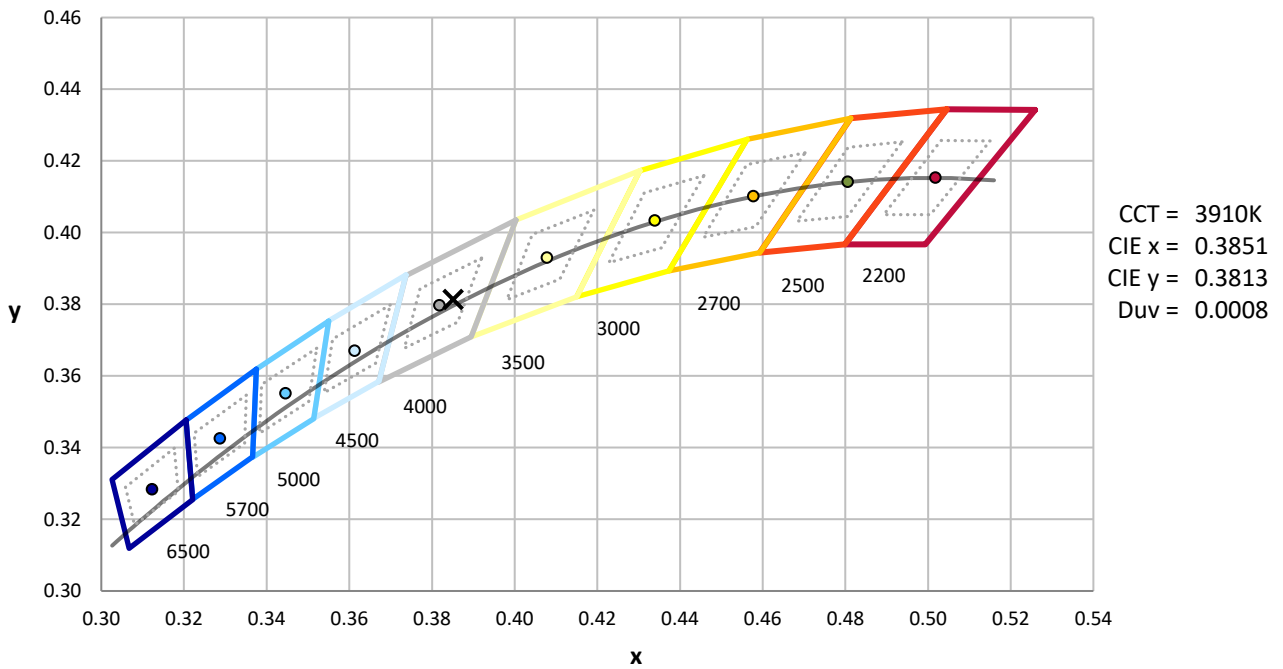
| Measurement and Test Equipment |                       |                  |                      |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument                     | Identification Number | Calibration Date | Calibration Due Date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

REPORT NUMBER: SP1-2506-458-11

**CIE 1931 Chromaticity Diagram**



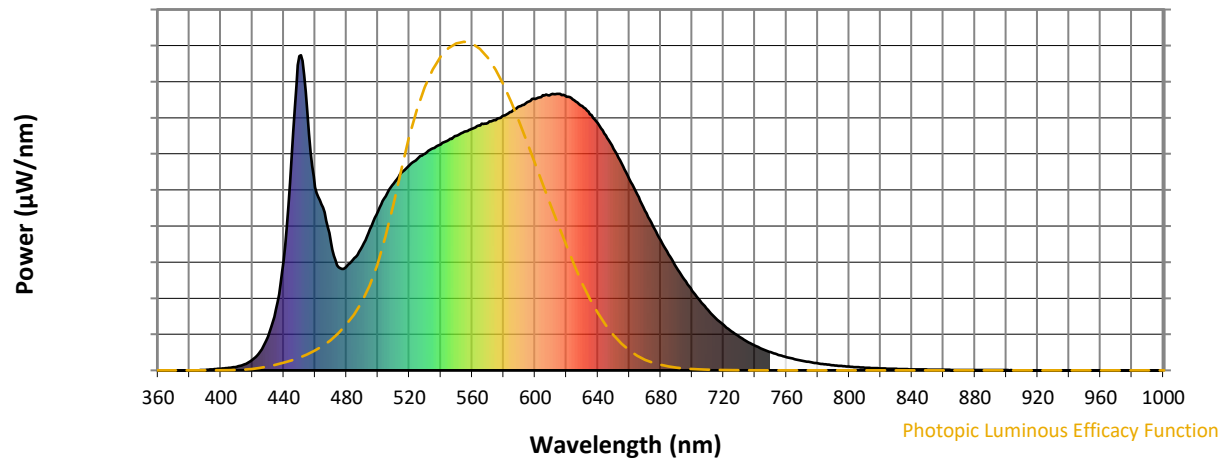
**CIE 1931 Chromaticity Diagram with 2017 ANSI 7-Step and 4-Step Quadrangles**



Point lies inside the ANSI 4000K 4-step quadrangle

REPORT NUMBER: SP1-2506-458-11

### Photopic Flux vs. Wavelength

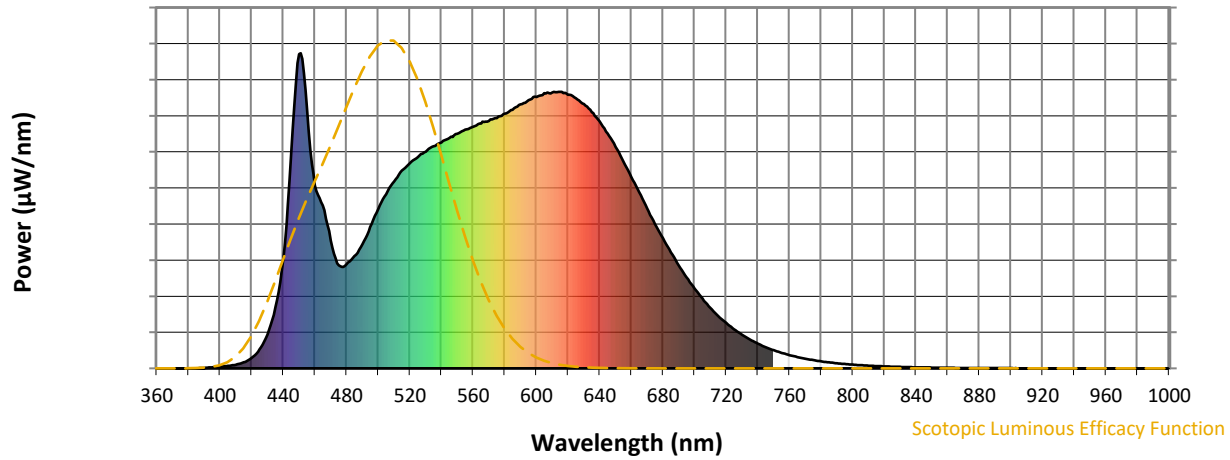


### Photopic Lumens: NR

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

REPORT NUMBER: SP1-2506-458-11

### Scotopic Flux vs. Wavelength



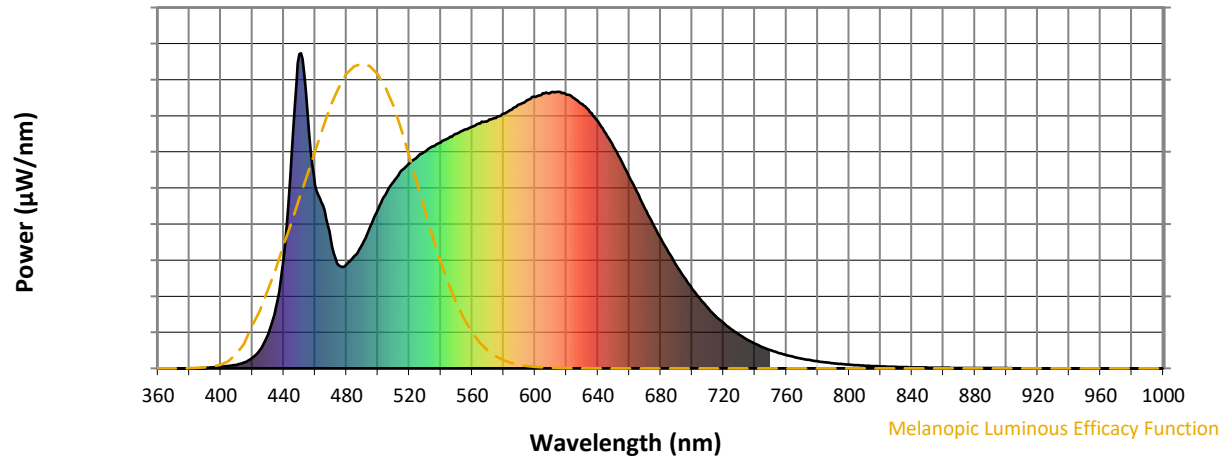
Scotopic Lumens: NR

S/P: 1.75

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

REPORT NUMBER: SP1-2506-458-11

### Melanopic Flux vs. Wavelength


**Melanopic Lumens: NR**
**M/P: 3.61**

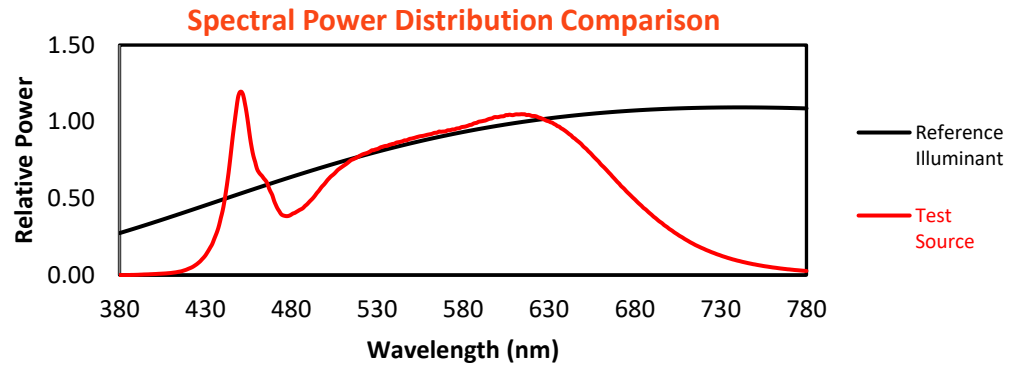
| $\lambda$<br>(nm) | Power<br>$\text{W}^\wedge/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^\wedge/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^\wedge/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power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

REPORT NUMBER: SP1-2506-458-11

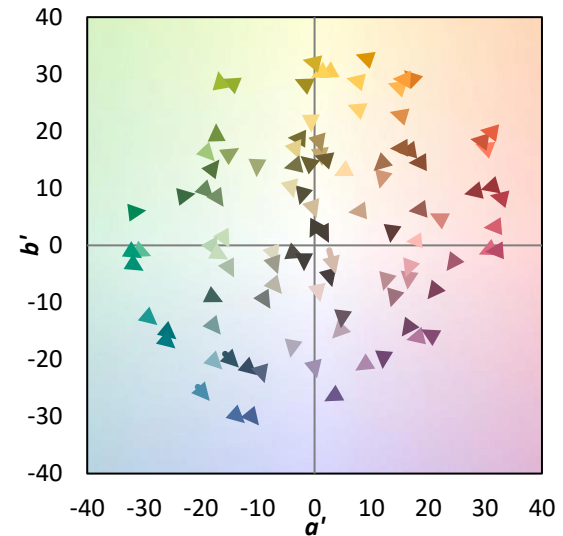
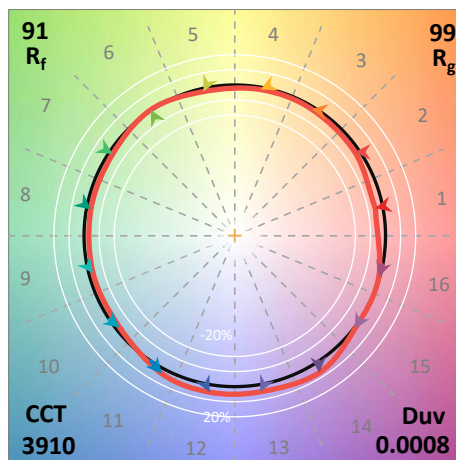
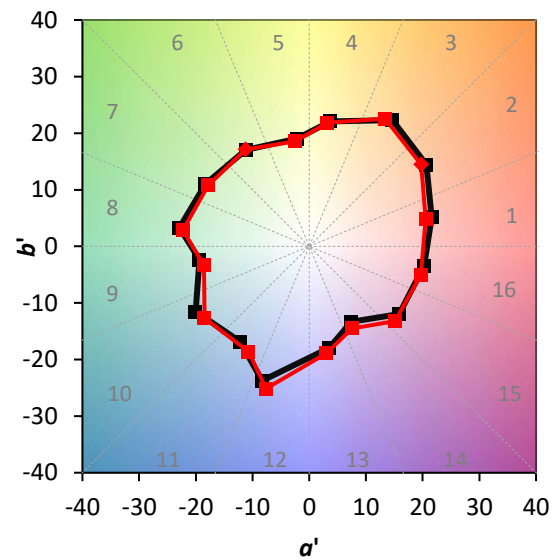
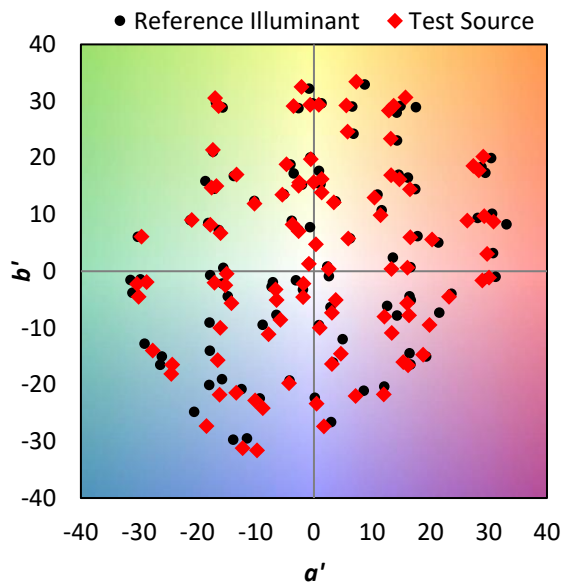
TM-30-18

### Summary

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



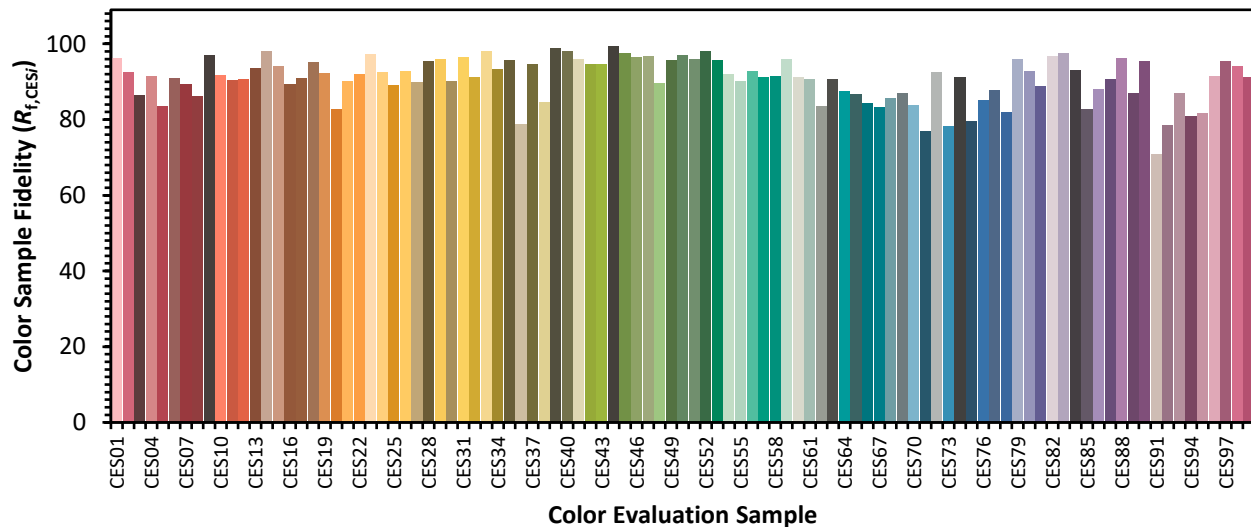
### Color Vector Graphics



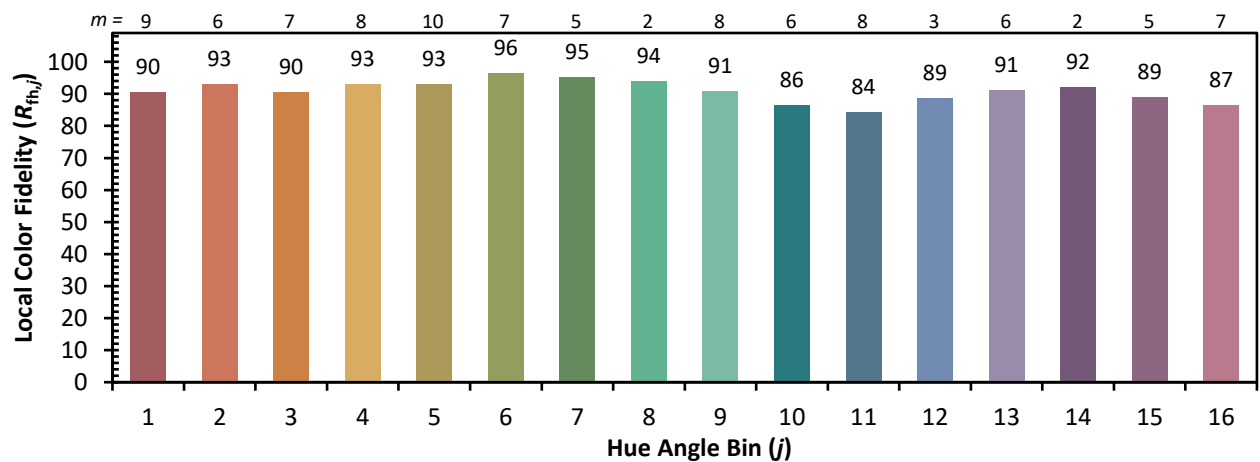
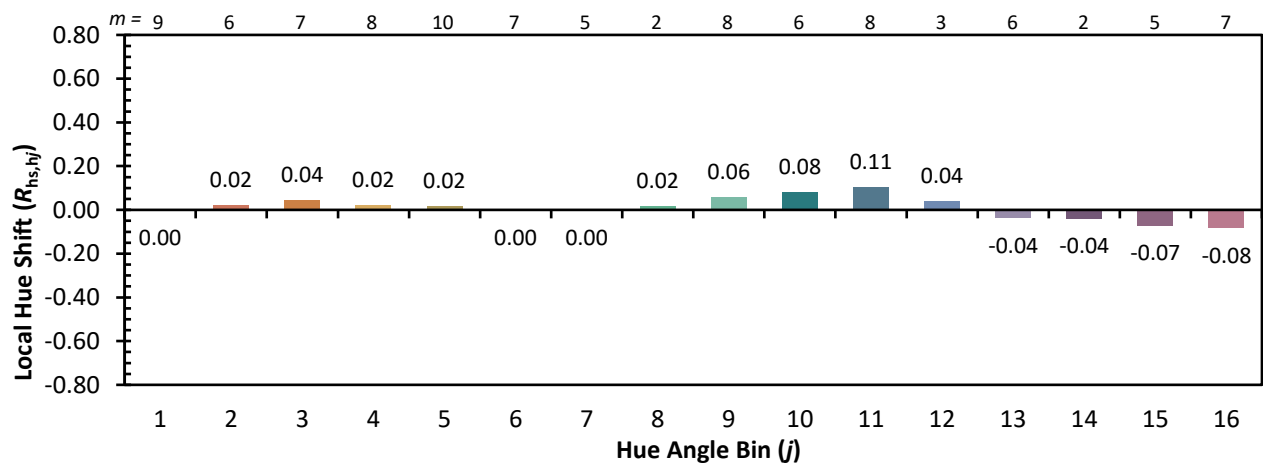
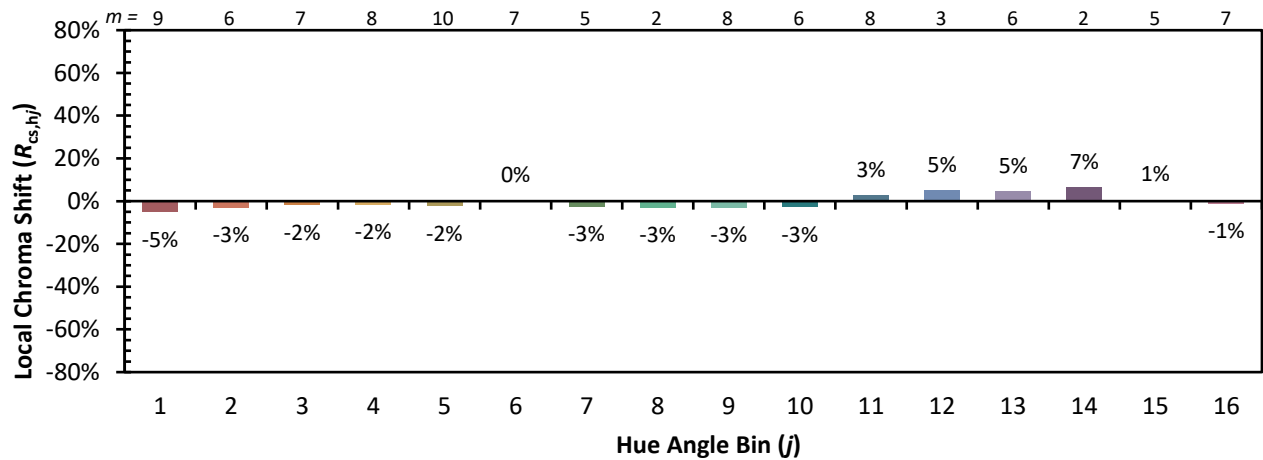


**Individual Sample Fidelity Index ( $R_{f,i}$ )**

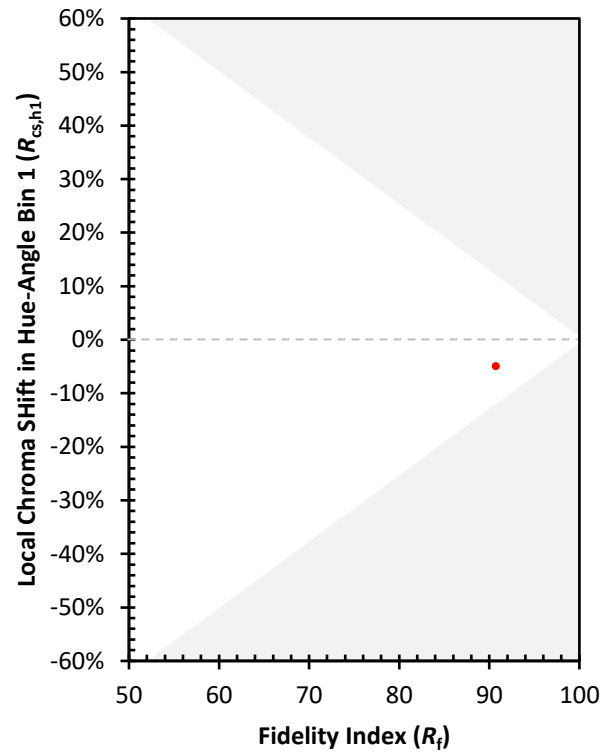
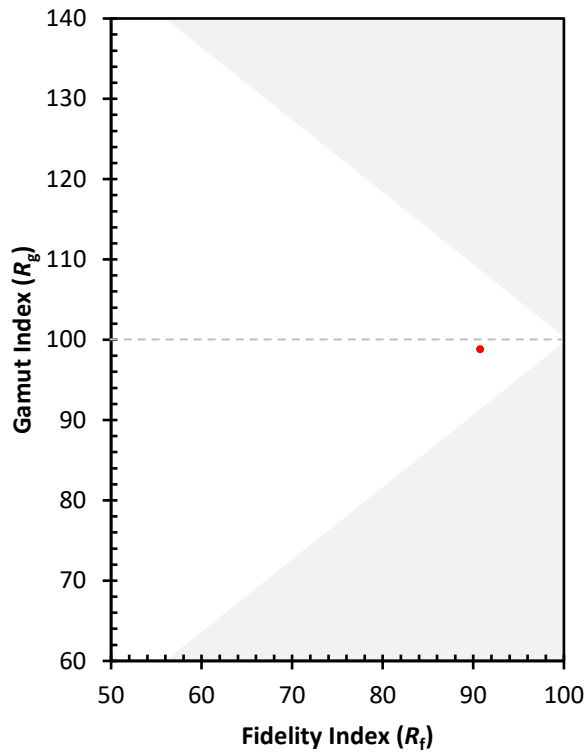
|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 86 | CES26 = 93 | CES51 = 96 | CES76 = 85 |
| CES02 = 62 | CES27 = 90 | CES52 = 98 | CES77 = 88 |
| CES03 = 31 | CES28 = 96 | CES53 = 96 | CES78 = 82 |
| CES04 = 69 | CES29 = 96 | CES54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



Color Rendition by Hue-Angle Bin



**Measure Comparisons**



(END OF REPORT)