

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: P1214739

Luminaire Tested: 22-ID2-30-CFD1-L840-U

Issue Date: 12/4/2025

**Test Information**

Test Method: LM-79-2019  
Report Number: P1214739  
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-L840-U  
Description: 2X2 IN DEPTH TROFFER WITH 1INCH CUBE DROP LENS  
Light Source: 4000K CCT, 80 CRI LEDS  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

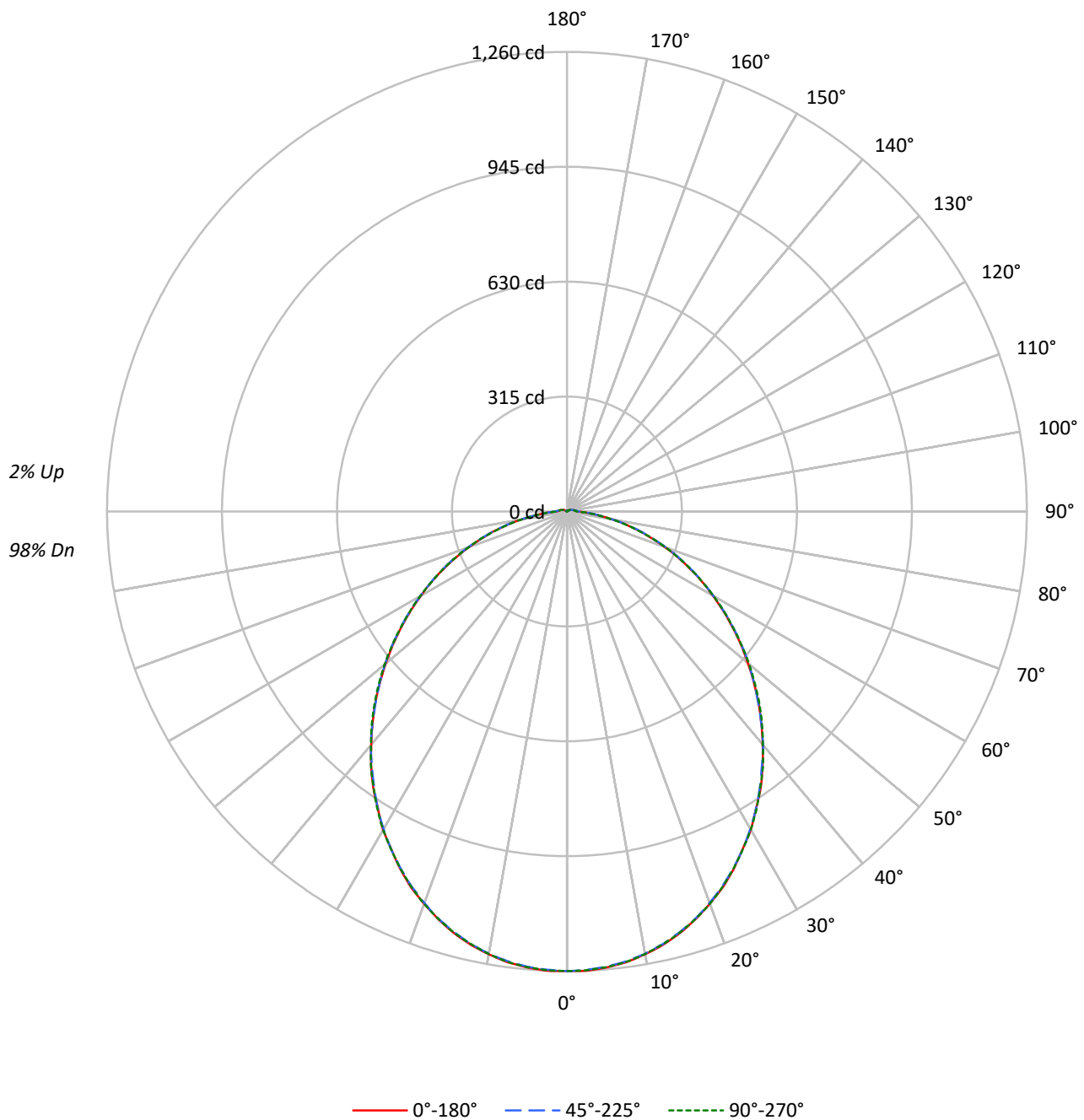
Lumens per Lamp: N/A  
Luminaire Lumens: 3323.8 lumens  
Efficiency: N/A  
Efficacy: 130.3 lumens/watt  
Spacing Criteria (0/90/45): 1.19 / 1.19 / 1.3  
Luminous Opening: Rectangular w/ Sides (W: 2' x L: 2' x H: 0.08')  
CIE Type: Direct

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



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### Luminous Intensity Polar Plot



TEST NUMBER: P1214739

CATALOG NUMBER: 22-ID2-30-CFD1-L840-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°  | 3391 | 3391 | 3391 |
| 5°  | 3377 | 3367 | 3375 |
| 10° | 3345 | 3331 | 3343 |
| 15° | 3298 | 3277 | 3295 |
| 20° | 3230 | 3205 | 3231 |
| 25° | 3152 | 3121 | 3148 |
| 30° | 3061 | 3024 | 3060 |
| 35° | 2958 | 2913 | 2951 |
| 40° | 2835 | 2804 | 2838 |
| 45° | 2717 | 2670 | 2728 |
| 50° | 2587 | 2550 | 2605 |
| 55° | 2458 | 2415 | 2471 |
| 60° | 2323 | 2274 | 2337 |
| 65° | 2182 | 2130 | 2200 |
| 70° | 2022 | 1968 | 2034 |
| 75° | 1847 | 1768 | 1821 |
| 80° | 1599 | 1509 | 1578 |
| 85° | 1390 | 1284 | 1326 |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 90°

Vertical Angle: 45°

Luminance: 2728 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 119.0  | 3.6       |
| 10°-20°   | 336.7  | 10.1      |
| 20°-30°   | 497.1  | 15.0      |
| 30°-40°   | 577.1  | 17.4      |
| 40°-50°   | 573.2  | 17.2      |
| 50°-60°   | 497.8  | 15.0      |
| 60°-70°   | 371.3  | 11.2      |
| 70°-80°   | 217.4  | 6.5       |
| 80°-90°   | 77.7   | 2.3       |
| 90°-100°  | 26.5   | 0.8       |
| 100°-110° | 16.5   | 0.5       |
| 110°-120° | 8.7    | 0.3       |
| 120°-130° | 3.7    | 0.1       |
| 130°-140° | 1.1    | 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°    | 952.7  | 28.7      |
| 0°-40°    | 1529.8 | 46.0      |
| 0°-60°    | 2600.9 | 78.2      |
| 0°-90°    | 3267.2 | 98.3      |
| 90°-120°  | 51.6   | 1.6       |
| 90°-150°  | 56.6   | 1.7       |
| 90°-180°  | 57.0   | 1.7       |
| 0°-180°   | 3323.8 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 1260 | 1260  | 1260 | 1260  | 1260 |      |
| 5°   | 1255 | 1254  | 1253 | 1252  | 1254 | 119  |
| 15°  | 1197 | 1195  | 1194 | 1194  | 1195 | 337  |
| 25°  | 1081 | 1080  | 1079 | 1080  | 1080 | 498  |
| 35°  | 926  | 923   | 922  | 923   | 923  | 578  |
| 45°  | 743  | 743   | 741  | 744   | 746  | 572  |
| 55°  | 554  | 556   | 556  | 557   | 557  | 496  |
| 65°  | 372  | 376   | 375  | 375   | 375  | 369  |
| 75°  | 204  | 206   | 206  | 206   | 201  | 215  |
| 85°  | 66   | 68    | 68   | 66    | 63   | 66   |
| 90°  | 28   | 30    | 31   | 30    | 27   | 17   |
| 95°  | 23   | 24    | 25   | 24    | 23   | 18   |
| 105° | 16   | 16    | 16   | 15    | 16   | 17   |
| 115° | 10   | 8     | 8    | 8     | 10   | 10   |
| 125° | 5    | 4     | 3    | 4     | 5    | 5    |
| 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    | 0    |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 1260.1 | 1260.1 | 1260.1 | 1260.1 | 1260.1 |
| 2.5°   | 1260.5 | 1258.8 | 1257.6 | 1257.6 | 1258.8 |
| 5°     | 1254.6 | 1253.8 | 1252.6 | 1252.1 | 1253.8 |
| 7.5°   | 1246.3 | 1245.0 | 1243.8 | 1243.8 | 1245.5 |
| 10°    | 1232.9 | 1232.1 | 1231.3 | 1231.7 | 1232.1 |
| 12.5°  | 1217.1 | 1215.4 | 1214.5 | 1214.5 | 1215.0 |
| 15°    | 1196.6 | 1195.3 | 1194.1 | 1194.5 | 1195.3 |
| 17.5°  | 1172.4 | 1171.9 | 1170.7 | 1171.1 | 1171.5 |
| 20°    | 1144.4 | 1143.5 | 1142.3 | 1143.1 | 1144.8 |
| 22.5°  | 1115.6 | 1113.1 | 1112.2 | 1112.6 | 1113.9 |
| 25°    | 1081.3 | 1080.5 | 1078.8 | 1079.6 | 1080.1 |
| 27.5°  | 1042.9 | 1045.8 | 1043.7 | 1043.3 | 1044.1 |
| 30°    | 1007.8 | 1005.3 | 1004.9 | 1004.9 | 1007.4 |
| 32.5°  | 964.4  | 964.4  | 964.8  | 965.2  | 966.9  |
| 35°    | 925.5  | 922.6  | 921.8  | 923.0  | 923.4  |
| 37.5°  | 880.8  | 880.4  | 877.5  | 880.0  | 882.1  |
| 40°    | 834.1  | 833.6  | 836.1  | 834.5  | 834.9  |
| 42.5°  | 788.1  | 788.5  | 788.1  | 790.2  | 791.5  |
| 45°    | 742.6  | 743.0  | 741.3  | 743.8  | 745.5  |
| 47.5°  | 694.6  | 696.2  | 695.4  | 696.2  | 698.7  |
| 50°    | 647.4  | 649.5  | 650.3  | 650.3  | 652.0  |
| 52.5°  | 601.0  | 602.7  | 603.9  | 604.3  | 603.9  |
| 55°    | 553.8  | 556.3  | 556.3  | 557.2  | 556.7  |
| 57.5°  | 507.9  | 510.8  | 510.4  | 510.8  | 510.0  |
| 60°    | 461.5  | 463.6  | 464.0  | 464.9  | 464.4  |
| 62.5°  | 418.1  | 418.9  | 419.3  | 419.3  | 417.7  |
| 65°    | 372.1  | 375.5  | 375.1  | 374.6  | 375.1  |
| 67.5°  | 328.7  | 330.8  | 332.5  | 331.2  | 330.8  |
| 70°    | 285.3  | 289.0  | 289.0  | 288.6  | 286.9  |
| 72.5°  | 242.7  | 246.0  | 246.0  | 246.0  | 245.6  |
| 75°    | 204.2  | 205.5  | 205.9  | 205.5  | 201.3  |
| 77.5°  | 164.1  | 165.4  | 167.1  | 166.6  | 163.3  |
| 80°    | 126.6  | 129.1  | 128.6  | 128.2  | 124.9  |
| 82.5°  | 92.7   | 95.6   | 96.5   | 95.2   | 92.7   |
| 85°    | 65.6   | 67.7   | 68.5   | 66.4   | 62.6   |
| 87.5°  | 43.4   | 45.5   | 45.9   | 45.1   | 42.6   |
| 90°    | 28.0   | 30.1   | 30.9   | 30.1   | 27.1   |
| 92.5°  | 25.5   | 26.7   | 27.6   | 26.7   | 24.6   |
| 95°    | 23.4   | 24.2   | 25.1   | 24.2   | 23.0   |
| 97.5°  | 21.3   | 21.7   | 22.6   | 21.7   | 20.9   |
| 100°   | 19.6   | 19.2   | 20.0   | 19.2   | 19.2   |
| 102.5° | 17.5   | 17.1   | 18.0   | 17.1   | 17.5   |
| 105°   | 15.9   | 15.5   | 15.9   | 15.0   | 15.5   |
| 107.5° | 14.2   | 13.4   | 13.8   | 12.9   | 14.2   |
| 110°   | 12.5   | 11.7   | 11.7   | 10.9   | 12.5   |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°   | 22.5° | 45°  | 67.5° | 90°  |
|--------|------|-------|------|-------|------|
| 112.5° | 11.3 | 10.0  | 10.0 | 9.6   | 10.9 |
| 115°   | 9.6  | 8.4   | 8.4  | 7.9   | 9.6  |
| 117.5° | 8.4  | 7.1   | 6.7  | 7.1   | 8.4  |
| 120°   | 7.1  | 5.8   | 5.4  | 5.8   | 7.1  |
| 122.5° | 6.3  | 5.0   | 4.2  | 5.0   | 6.3  |
| 125°   | 5.0  | 4.2   | 2.9  | 4.2   | 5.0  |
| 127.5° | 4.2  | 2.9   | 1.7  | 3.3   | 4.2  |
| 130°   | 3.3  | 2.5   | 1.3  | 2.9   | 3.3  |
| 132.5° | 2.5  | 1.7   | 0.4  | 2.1   | 2.9  |
| 135°   | 1.7  | 1.3   | 0.4  | 1.3   | 2.1  |
| 137.5° | 1.3  | 0.8   | 0.4  | 0.8   | 1.7  |
| 140°   | 0.8  | 0.4   | 0.4  | 0.4   | 0.8  |
| 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  |

TEST NUMBER: P1214739

CATALOG NUMBER: 22-ID2-30-CFD1-L840-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 | 14.87            | 16.45 | 15.26 | 16.80 | 17.16 | 14.88          | 16.45 | 15.27 | 16.80 | 17.16 |
|                 | 3H   | 16.58            | 18.01 | 16.99 | 18.37 | 18.77 | 16.59          | 18.02 | 17.00 | 18.38 | 18.78 |
|                 | 4H   | 17.22            | 18.56 | 17.65 | 18.95 | 19.37 | 17.23          | 18.57 | 17.65 | 18.95 | 19.37 |
|                 | 6H   | 17.69            | 18.94 | 18.13 | 19.34 | 19.77 | 17.70          | 18.94 | 18.13 | 19.34 | 19.77 |
|                 | 8H   | 17.85            | 19.04 | 18.30 | 19.46 | 19.90 | 17.85          | 19.04 | 18.30 | 19.46 | 19.90 |
|                 | 12H  | 17.97            | 19.11 | 18.42 | 19.52 | 19.99 | 17.96          | 19.10 | 18.42 | 19.51 | 19.98 |
| 4H              | 2H   | 15.46            | 16.80 | 15.88 | 17.18 | 17.60 | 15.46          | 16.81 | 15.89 | 17.19 | 17.61 |
|                 | 3H   | 17.39            | 18.52 | 17.83 | 18.95 | 19.39 | 17.40          | 18.52 | 17.84 | 18.96 | 19.40 |
|                 | 4H   | 18.16            | 19.18 | 18.62 | 19.62 | 20.10 | 18.16          | 19.18 | 18.62 | 19.63 | 20.11 |
|                 | 6H   | 18.76            | 19.65 | 19.24 | 20.12 | 20.62 | 18.76          | 19.65 | 19.24 | 20.12 | 20.62 |
|                 | 8H   | 18.96            | 19.80 | 19.45 | 20.27 | 20.78 | 18.96          | 19.79 | 19.45 | 20.27 | 20.77 |
|                 | 12H  | 19.13            | 19.88 | 19.63 | 20.39 | 20.90 | 19.12          | 19.87 | 19.62 | 20.37 | 20.88 |
| 8H              | 4H   | 18.45            | 19.28 | 18.94 | 19.76 | 20.26 | 18.45          | 19.29 | 18.94 | 19.76 | 20.27 |
|                 | 6H   | 19.17            | 19.86 | 19.69 | 20.38 | 20.90 | 19.17          | 19.86 | 19.69 | 20.38 | 20.90 |
|                 | 8H   | 19.45            | 20.07 | 19.98 | 20.61 | 21.13 | 19.44          | 20.07 | 19.98 | 20.61 | 21.13 |
|                 | 12H  | 19.70            | 20.25 | 20.23 | 20.77 | 21.37 | 19.68          | 20.24 | 20.22 | 20.76 | 21.36 |
| 12H             | 4H   | 18.48            | 19.23 | 18.98 | 19.74 | 20.24 | 18.48          | 19.23 | 18.99 | 19.74 | 20.25 |
|                 | 6H   | 19.22            | 19.85 | 19.76 | 20.38 | 20.91 | 19.22          | 19.85 | 19.75 | 20.38 | 20.91 |
|                 | 8H   | 19.56            | 20.11 | 20.09 | 20.63 | 21.23 | 19.55          | 20.11 | 20.09 | 20.63 | 21.23 |



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

Report Prepared for

Cooper Lighting Solutions

Corelite

Report Number: SP1-2506-458-5

Test Date: 08/26/2025

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

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

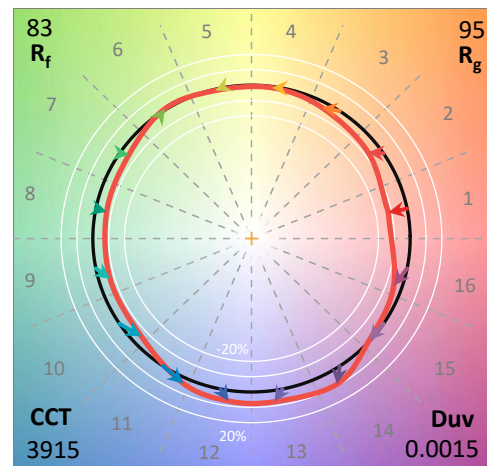
### Test Information

Test Method: LM-79-2019  
 Report Number: SP1-2506-458-5  
 Test Lab: COOPER LIGHTING SOLUTIONS  
 Photometer: SP1 - 76IN SPHERE  
 Measurement Geometry:  $4\pi$   
 Issue Date: 08/27/2025  
 Manufacturer: COOPER LIGHTING SOLUTIONS  
 Product Line: Corelite  
 Catalog Number: **22ID2-55-CFR1-L840-U**  
 Description: 2X2 CGTX WITH INDEPTH FRAME AND CFR1 LENS - 5500 LUMEN 4000K 80CRI

### Spectral Parameters

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

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



### Test Conditions

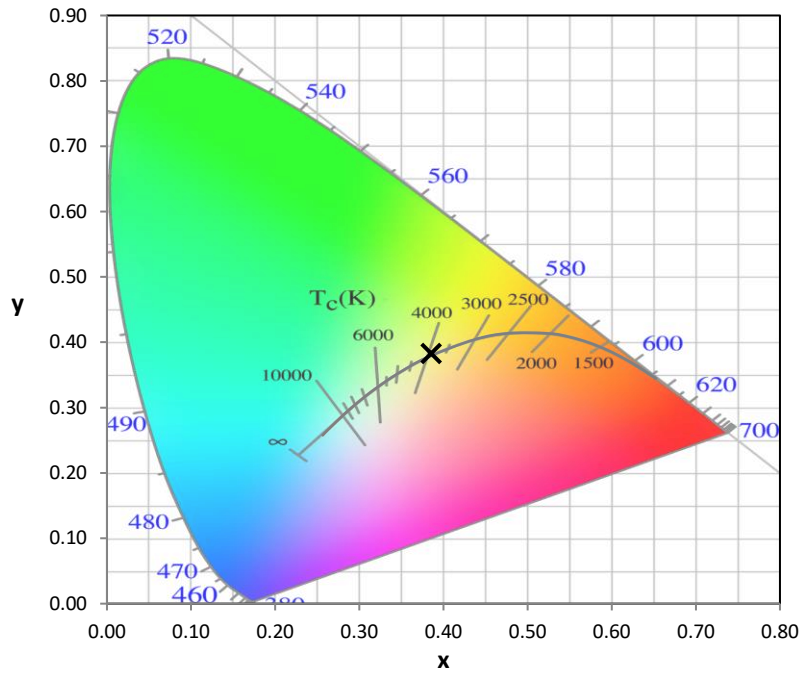
Stabilization Time: 34M  
 Operation Time: 1H 34M  
 Sphere Temperature (°C): 25.2

REPORT NUMBER: SP1-2506-458-5

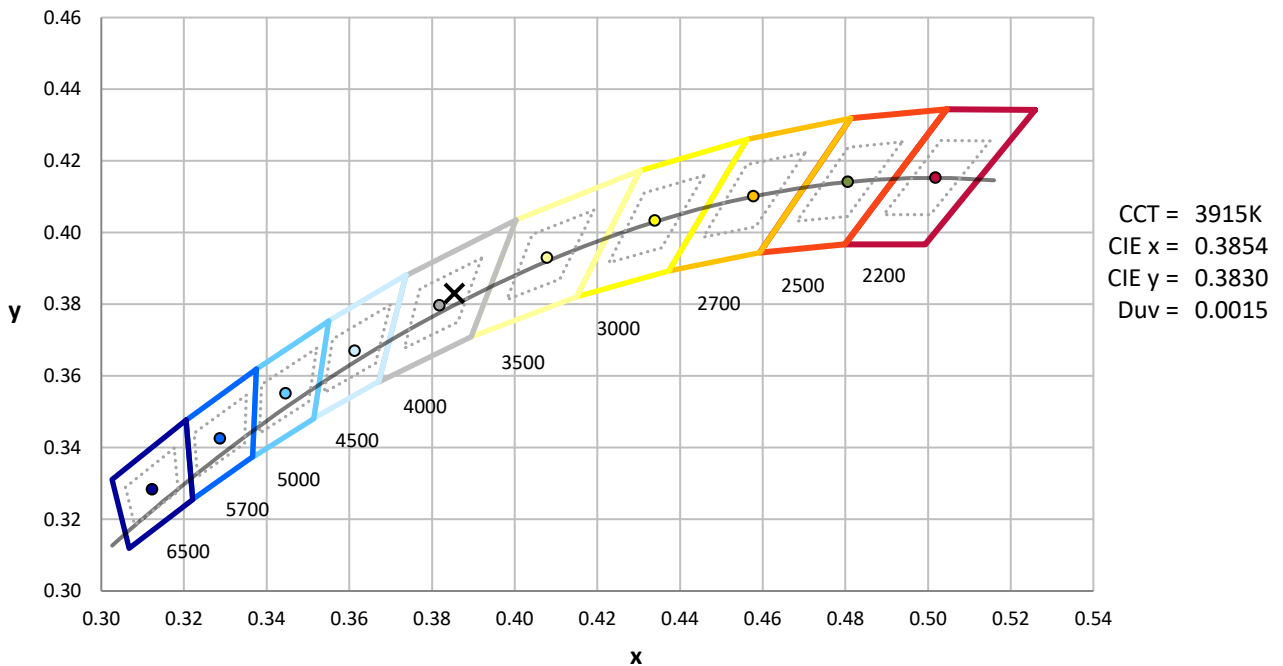
| Measurement and Test Equipment |                       |                  |                      |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument                     | Identification Number | Calibration Date | Calibration Due Date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

REPORT NUMBER: SP1-2506-458-5

**CIE 1931 Chromaticity Diagram**



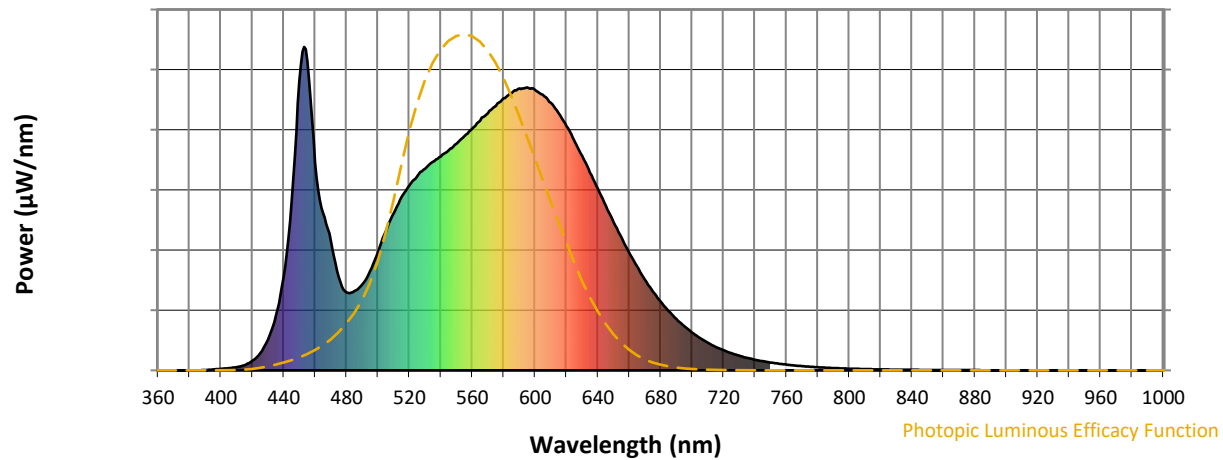
**CIE 1931 Chromaticity Diagram with 2017 ANSI 7-Step and 4-Step Quadrangles**



Point lies inside the ANSI 4000K 4-step quadrangle

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### Photopic Flux vs. Wavelength

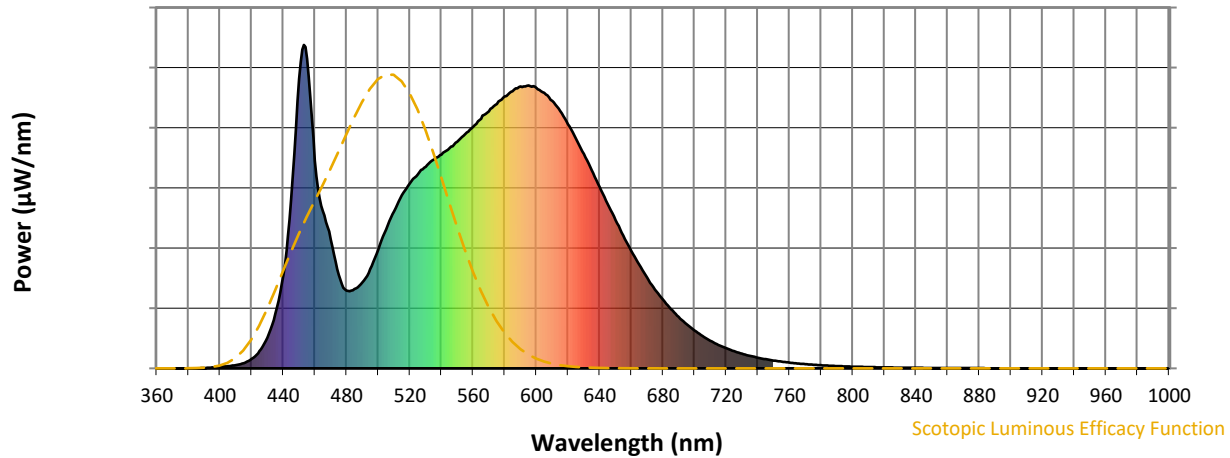


### Photopic Lumens: NR

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

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### Scotopic Flux vs. Wavelength



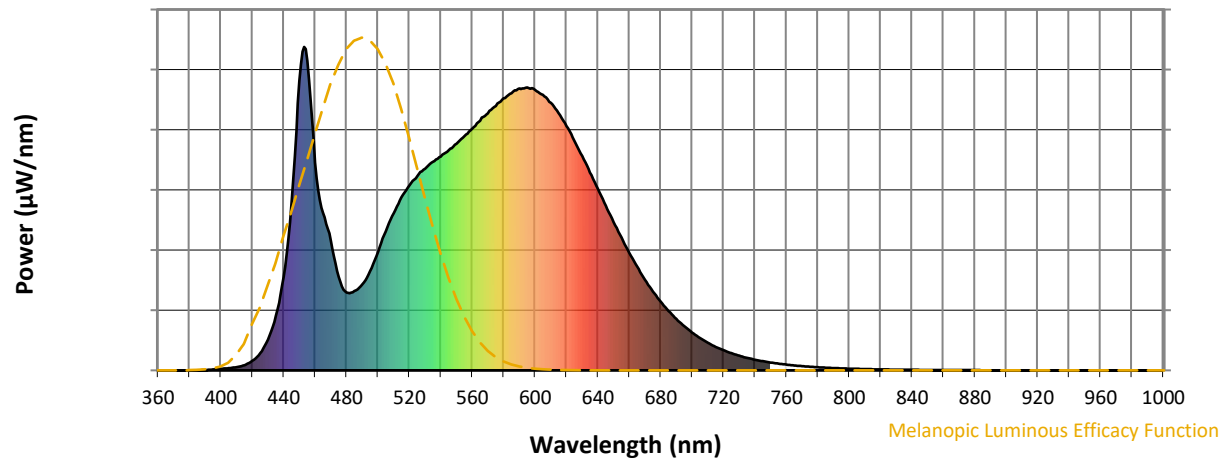
Scotopic Lumens: NR

S/P: 1.65

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

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### Melanopic Flux vs. Wavelength



Melanopic Lumens: NR

M/P: 3.36

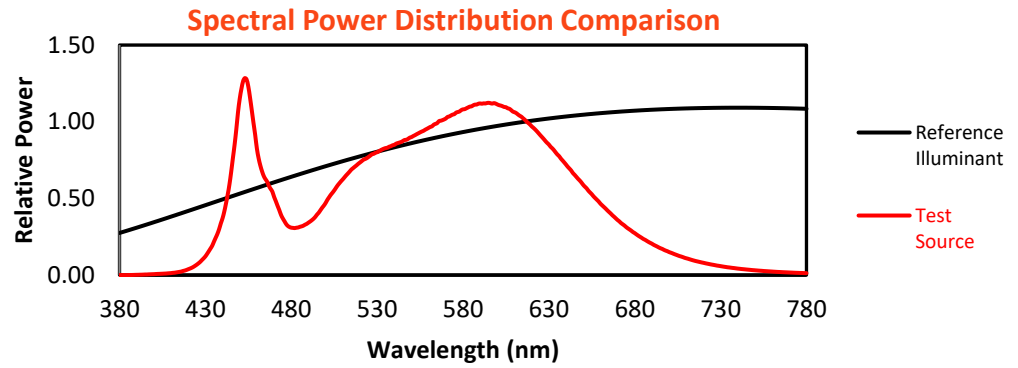
| λ<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>(φ/nm)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

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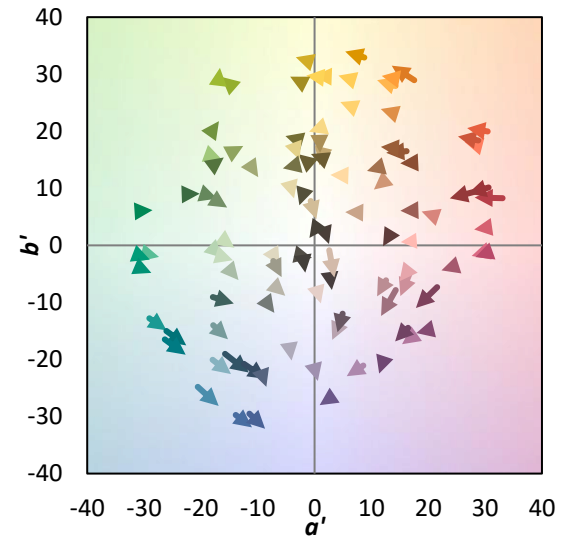
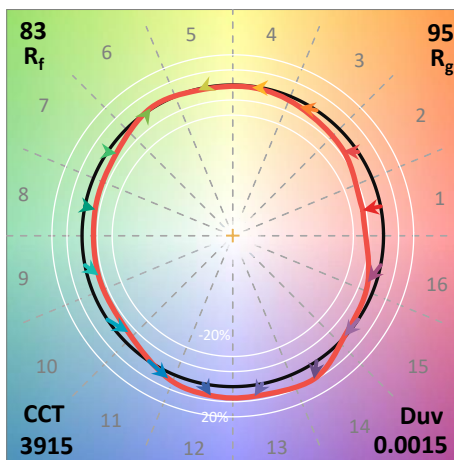
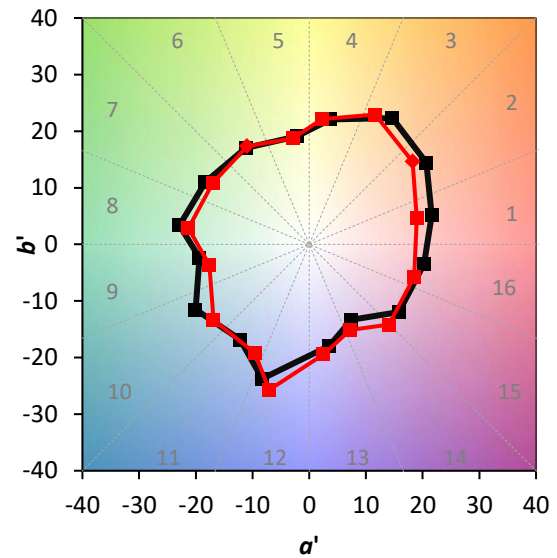
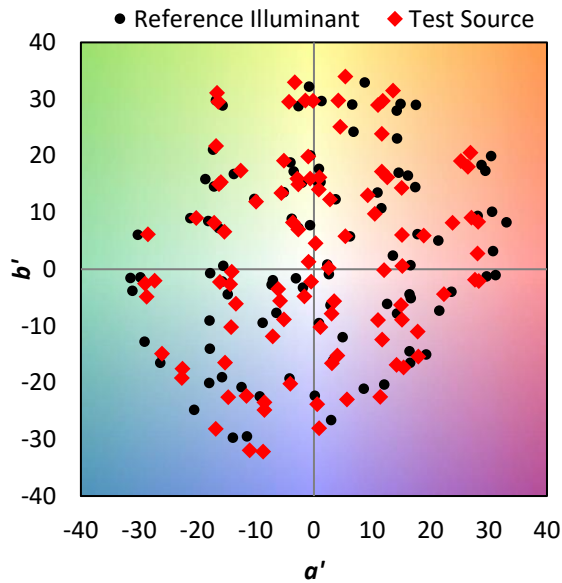
TM-30-18

### Summary

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



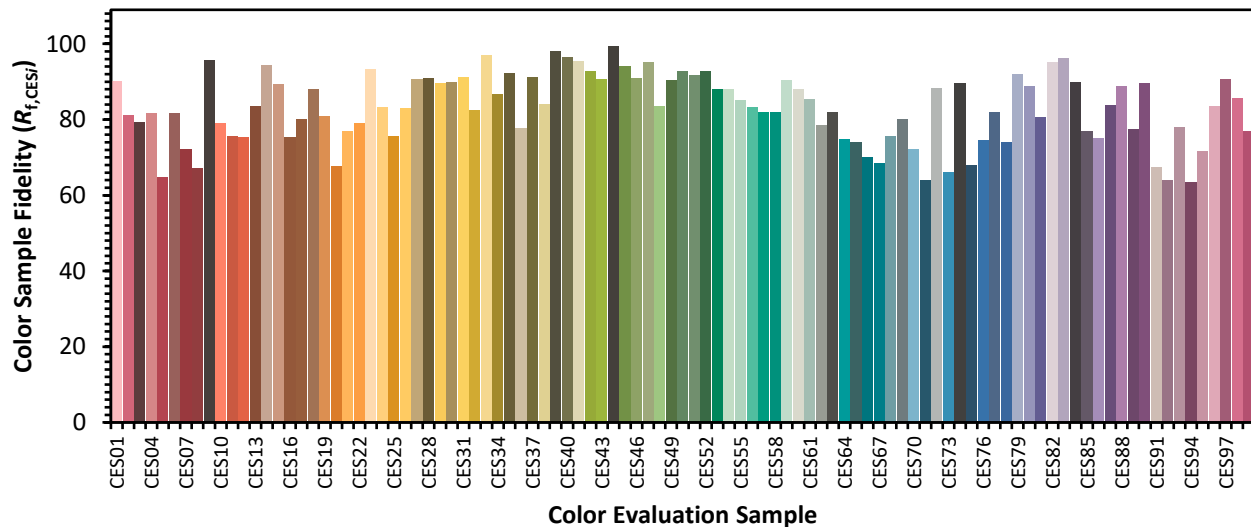
### Color Vector Graphics



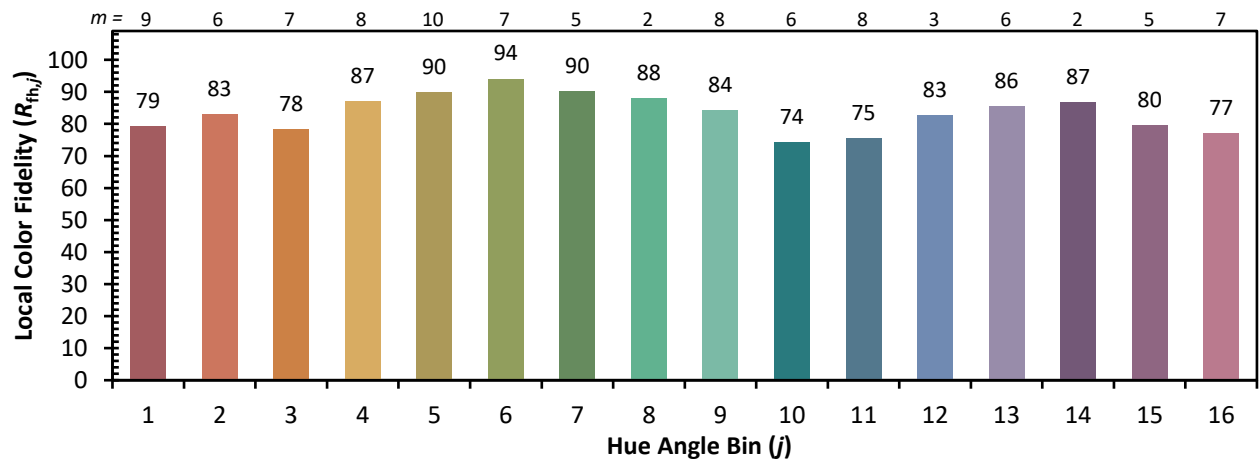
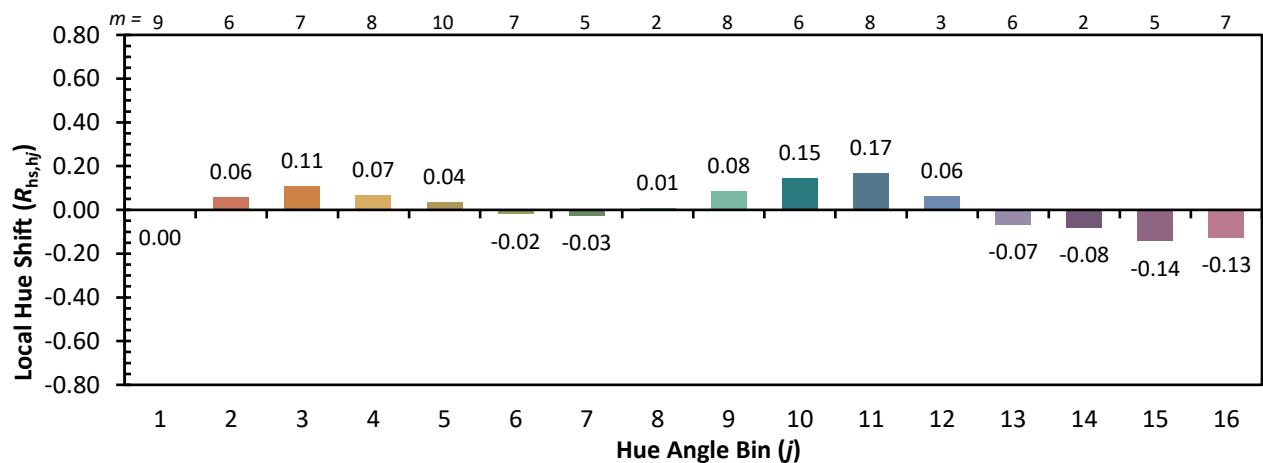
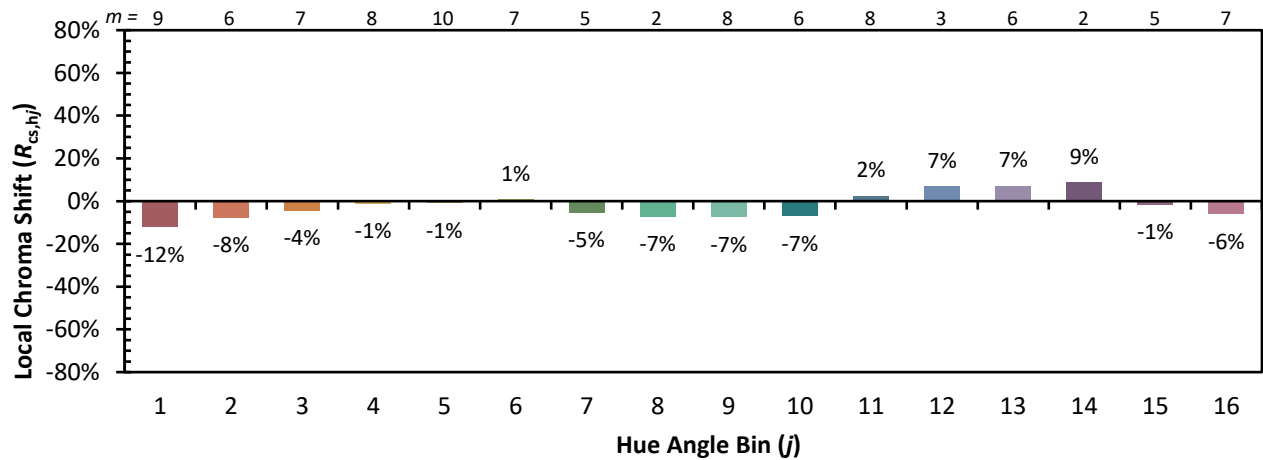


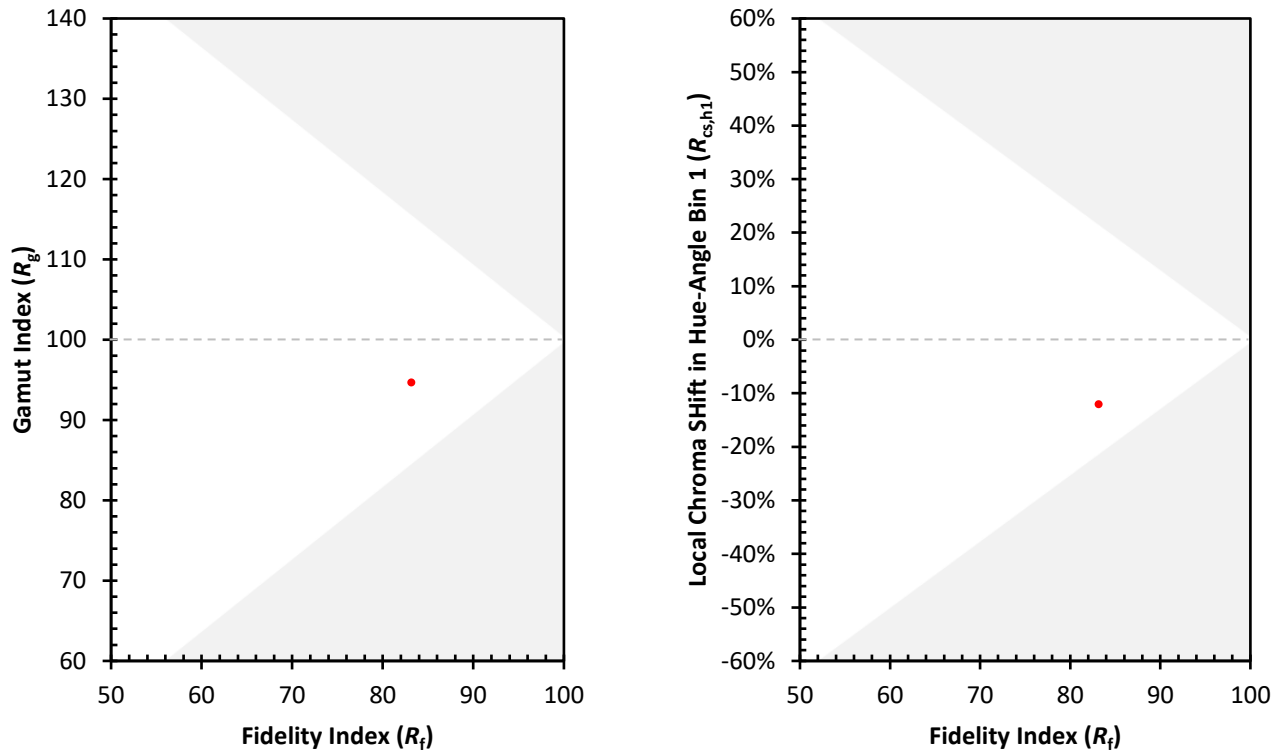
**Individual Sample Fidelity Index ( $R_{f,i}$ )**

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



### Color Rendition by Hue-Angle Bin



**Measure Comparisons**


(END OF REPORT)