

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: P1216981

Luminaire Tested: 14-ID2-70-CFD1-L835-U

Issue Date: 12/5/2025

**Test Information**

Test Method: LM-79-2019  
Report Number: P1216981  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-2508-507-15)  
Test Lab: INNOVATION CENTER  
Issue Date: 12/5/2025  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: CORELITE  
Catalog Number: 14-ID2-70-CFD1-L835-U  
Description: 1X4 IN DEPTH TROFFER WITH 1INCH CUBE DROP LENS  
Light Source: 3500K CCT, 80 CRI LEDS  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

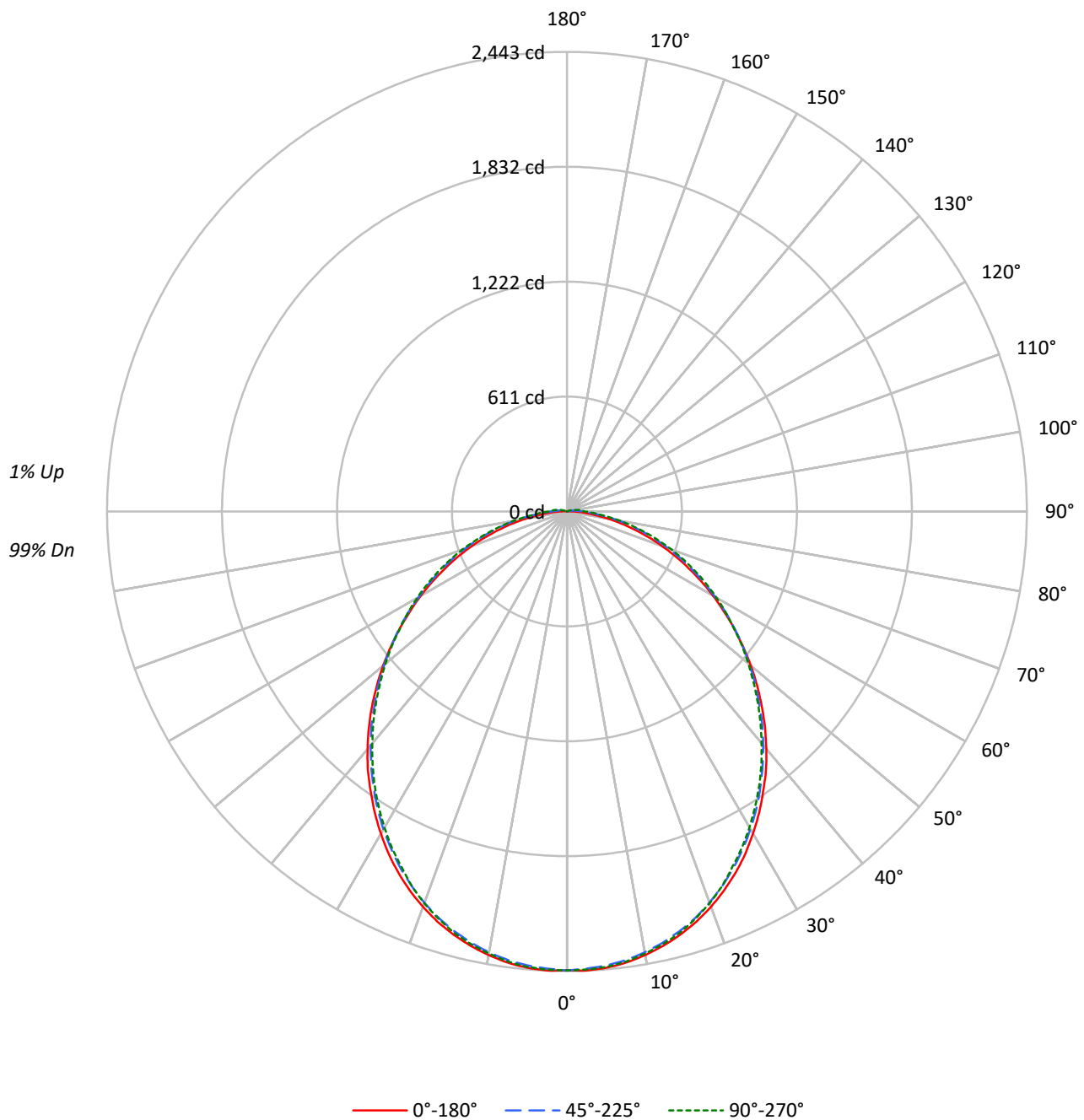
Lumens per Lamp: N/A  
Luminaire Lumens: 6451.2 lumens  
Efficiency: N/A  
Efficacy: 109.3 lumens/watt  
Spacing Criteria (0/90/45): 1.21 / 1.19 / 1.3  
Luminous Opening: Rectangular w/ Sides (W: 1' x L: 4' x H: 0.08')  
CIE Type: Direct

Input Watts (W): 59  
Input Voltage (V): 120  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT



TEST NUMBER: P1216981  
CATALOG NUMBER: 14-ID2-70-CFD1-L835-U

### Luminous Intensity Polar Plot



TEST NUMBER: P1216981

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

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

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 6565 | 6565 | 6565 |
| 5°  | 6564 | 6503 | 6518 |
| 10° | 6521 | 6423 | 6430 |
| 15° | 6453 | 6317 | 6322 |
| 20° | 6358 | 6180 | 6166 |
| 25° | 6234 | 6013 | 5960 |
| 30° | 6072 | 5821 | 5758 |
| 35° | 5887 | 5606 | 5538 |
| 40° | 5693 | 5378 | 5295 |
| 45° | 5463 | 5131 | 5048 |
| 50° | 5214 | 4890 | 4807 |
| 55° | 4944 | 4638 | 4555 |
| 60° | 4661 | 4354 | 4338 |
| 65° | 4350 | 4078 | 4091 |
| 70° | 4010 | 3778 | 3811 |
| 75° | 3605 | 3440 | 3444 |
| 80° | 3069 | 3064 | 3057 |
| 85° | 2511 | 2708 | 2732 |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 5463 cd/sqm

TEST NUMBER: P1216981  
 CATALOG NUMBER: 14-ID2-70-CFD1-L835-U

**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 230.3  | 3.6       |
| 10°-20°   | 652.6  | 10.1      |
| 20°-30°   | 964.4  | 14.9      |
| 30°-40°   | 1121.2 | 17.4      |
| 40°-50°   | 1115.1 | 17.3      |
| 50°-60°   | 970.1  | 15.0      |
| 60°-70°   | 728.3  | 11.3      |
| 70°-80°   | 435.3  | 6.7       |
| 80°-90°   | 169.0  | 2.6       |
| 90°-100°  | 52.1   | 0.8       |
| 100°-110° | 12.7   | 0.2       |
| 110°-120° | 0.2    | 0.0       |
| 120°-130° | 0.0    | 0.0       |
| 130°-140° | 0.0    | 0.0       |
| 140°-150° | 0.0    | 0.0       |
| 150°-160° | 0.0    | 0.0       |
| 160°-170° | 0.0    | 0.0       |
| 170°-180° | 0.0    | 0.0       |
| 0°-30°    | 1847.3 | 28.6      |
| 0°-40°    | 2968.5 | 46.0      |
| 0°-60°    | 5053.6 | 78.3      |
| 0°-90°    | 6386.3 | 99.0      |
| 90°-120°  | 65.0   | 1.0       |
| 90°-150°  | 65.0   | 1.0       |
| 90°-180°  | 65.0   | 1.0       |
| 0°-180°   | 6451.2 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 2440 | 2440  | 2440 | 2440  | 2440 |      |
| 5°   | 2434 | 2431  | 2422 | 2423  | 2430 | 231  |
| 15°  | 2329 | 2320  | 2310 | 2310  | 2318 | 656  |
| 25°  | 2119 | 2107  | 2092 | 2078  | 2082 | 975  |
| 35°  | 1817 | 1810  | 1791 | 1774  | 1780 | 1137 |
| 45°  | 1464 | 1457  | 1444 | 1430  | 1433 | 1129 |
| 55°  | 1084 | 1084  | 1088 | 1081  | 1082 | 969  |
| 65°  | 712  | 722   | 738  | 745   | 753  | 707  |
| 75°  | 373  | 393   | 418  | 429   | 430  | 395  |
| 85°  | 100  | 128   | 159  | 168   | 169  | 107  |
| 90°  | 27   | 50    | 79   | 92    | 93   | 19   |
| 95°  | 18   | 25    | 51   | 67    | 73   | 13   |
| 105° | 3    | 2     | 4    | 22    | 27   | 4    |
| 115° | 0    | 0     | 0    | 0     | 0    | 0    |
| 125° | 0    | 0     | 0    | 0     | 0    | 0    |
| 135° | 0    | 0     | 0    | 0     | 0    | 0    |
| 145° | 0    | 0     | 0    | 0     | 0    | 0    |
| 155° | 0    | 0     | 0    | 0     | 0    | 0    |
| 165° | 0    | 0     | 0    | 0     | 0    | 0    |
| 175° | 0    | 0     | 0    | 0     | 0    | 0    |
| 180° | 0    | 0     | 0    | 0     | 0    | 0    |

TEST NUMBER: P1216981

CATALOG NUMBER: 14-ID2-70-CFD1-L835-U

**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 2439.6 | 2439.6 | 2439.6 | 2439.6 | 2439.6 |
| 2.5°   | 2442.8 | 2440.6 | 2432.0 | 2434.1 | 2437.4 |
| 5°     | 2434.1 | 2430.9 | 2422.2 | 2423.3 | 2429.8 |
| 7.5°   | 2418.9 | 2412.4 | 2404.8 | 2405.9 | 2412.4 |
| 10°    | 2395.0 | 2389.6 | 2379.8 | 2380.9 | 2386.3 |
| 12.5°  | 2364.6 | 2358.1 | 2348.3 | 2349.4 | 2355.9 |
| 15°    | 2328.8 | 2320.1 | 2310.3 | 2310.3 | 2317.9 |
| 17.5°  | 2286.4 | 2276.6 | 2265.8 | 2262.5 | 2270.1 |
| 20°    | 2236.4 | 2226.7 | 2213.6 | 2207.1 | 2215.8 |
| 22.5°  | 2181.0 | 2170.2 | 2155.0 | 2145.2 | 2155.0 |
| 25°    | 2119.1 | 2107.2 | 2092.0 | 2077.9 | 2082.2 |
| 27.5°  | 2051.8 | 2039.8 | 2022.5 | 2008.3 | 2013.8 |
| 30°    | 1976.8 | 1967.1 | 1949.7 | 1934.5 | 1938.8 |
| 32.5°  | 1899.7 | 1890.0 | 1872.6 | 1855.2 | 1860.6 |
| 35°    | 1817.2 | 1809.6 | 1791.1 | 1773.7 | 1780.2 |
| 37.5°  | 1736.8 | 1724.9 | 1707.5 | 1689.0 | 1695.5 |
| 40°    | 1647.7 | 1638.0 | 1621.7 | 1602.1 | 1608.6 |
| 42.5°  | 1557.6 | 1548.9 | 1535.9 | 1517.4 | 1521.7 |
| 45°    | 1464.2 | 1456.6 | 1443.5 | 1430.5 | 1432.7 |
| 47.5°  | 1369.7 | 1364.2 | 1356.6 | 1342.5 | 1344.7 |
| 50°    | 1275.2 | 1271.9 | 1266.5 | 1254.5 | 1257.8 |
| 52.5°  | 1178.5 | 1176.3 | 1176.3 | 1166.6 | 1172.0 |
| 55°    | 1084.0 | 1084.0 | 1088.4 | 1080.7 | 1081.8 |
| 57.5°  | 988.4  | 992.8  | 999.3  | 994.9  | 1001.5 |
| 60°    | 896.1  | 899.4  | 908.0  | 911.3  | 917.8  |
| 62.5°  | 803.8  | 811.4  | 822.2  | 827.7  | 834.2  |
| 65°    | 712.5  | 722.3  | 737.5  | 745.1  | 752.7  |
| 67.5°  | 624.6  | 635.4  | 657.1  | 664.7  | 671.3  |
| 70°    | 537.7  | 552.9  | 573.5  | 584.4  | 590.9  |
| 72.5°  | 452.9  | 471.4  | 495.3  | 506.2  | 507.2  |
| 75°    | 372.6  | 393.2  | 418.2  | 429.0  | 430.1  |
| 77.5°  | 295.4  | 315.0  | 344.3  | 355.2  | 355.2  |
| 80°    | 220.5  | 243.3  | 277.0  | 285.7  | 286.8  |
| 82.5°  | 155.3  | 180.3  | 211.8  | 221.6  | 221.6  |
| 85°    | 99.9   | 128.2  | 158.6  | 168.4  | 169.4  |
| 87.5°  | 58.7   | 85.8   | 115.1  | 126.0  | 127.1  |
| 90°    | 27.2   | 50.0   | 79.3   | 92.3   | 93.4   |
| 92.5°  | 22.8   | 38.0   | 65.2   | 79.3   | 82.5   |
| 95°    | 18.5   | 25.0   | 51.1   | 67.3   | 72.8   |
| 97.5°  | 14.1   | 14.1   | 38.0   | 55.4   | 60.8   |
| 100°   | 9.8    | 7.6    | 25.0   | 43.4   | 50.0   |
| 102.5° | 6.5    | 4.3    | 13.0   | 31.5   | 38.0   |
| 105°   | 3.3    | 2.2    | 4.3    | 21.7   | 27.2   |
| 107.5° | 1.1    | 0.0    | 0.0    | 10.9   | 17.4   |
| 110°   | 0.0    | 0.0    | 0.0    | 2.2    | 7.6    |

TEST NUMBER: P1216981

CATALOG NUMBER: 14-ID2-70-CFD1-L835-U

**CANDELA DISTRIBUTION (continued):**

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

TEST NUMBER: P1216981

CATALOG NUMBER: 14-ID2-70-CFD1-L835-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 | 17.04            | 18.64 | 17.43 | 18.98 | 19.32 | 17.27          | 18.87 | 17.65 | 19.20 | 19.54 |
|                 | 3H   | 18.66            | 20.10 | 19.05 | 20.45 | 20.84 | 19.12          | 20.57 | 19.52 | 20.92 | 21.30 |
|                 | 4H   | 19.23            | 20.59 | 19.64 | 20.96 | 21.36 | 19.85          | 21.22 | 20.27 | 21.59 | 21.99 |
|                 | 6H   | 19.61            | 20.88 | 20.04 | 21.26 | 21.68 | 20.45          | 21.71 | 20.88 | 22.10 | 22.51 |
|                 | 8H   | 19.72            | 20.93 | 20.16 | 21.34 | 21.76 | 20.68          | 21.89 | 21.12 | 22.30 | 22.72 |
|                 | 12H  | 19.79            | 20.95 | 20.23 | 21.35 | 21.80 | 20.88          | 22.04 | 21.33 | 22.44 | 22.90 |
| 4H              | 2H   | 17.66            | 19.03 | 18.08 | 19.39 | 19.80 | 17.84          | 19.20 | 18.26 | 19.57 | 19.97 |
|                 | 3H   | 19.50            | 20.65 | 19.93 | 21.06 | 21.49 | 19.91          | 21.06 | 20.34 | 21.48 | 21.90 |
|                 | 4H   | 20.20            | 21.24 | 20.65 | 21.67 | 22.13 | 20.78          | 21.82 | 21.23 | 22.25 | 22.71 |
|                 | 6H   | 20.71            | 21.62 | 21.18 | 22.08 | 22.56 | 21.51          | 22.42 | 21.98 | 22.88 | 23.36 |
|                 | 8H   | 20.86            | 21.71 | 21.33 | 22.17 | 22.66 | 21.81          | 22.66 | 22.28 | 23.12 | 23.61 |
|                 | 12H  | 20.96            | 21.73 | 21.46 | 22.22 | 22.72 | 22.08          | 22.85 | 22.58 | 23.34 | 23.83 |
| 8H              | 4H   | 20.54            | 21.40 | 21.02 | 21.86 | 22.35 | 21.05          | 21.91 | 21.53 | 22.37 | 22.86 |
|                 | 6H   | 21.18            | 21.89 | 21.69 | 22.39 | 22.89 | 21.93          | 22.64 | 22.43 | 23.14 | 23.64 |
|                 | 8H   | 21.40            | 22.04 | 21.92 | 22.56 | 23.07 | 22.31          | 22.95 | 22.83 | 23.47 | 23.98 |
|                 | 12H  | 21.57            | 22.14 | 22.09 | 22.65 | 23.23 | 22.69          | 23.26 | 23.22 | 23.77 | 24.35 |
| 12H             | 4H   | 20.59            | 21.36 | 21.09 | 21.85 | 22.35 | 21.08          | 21.85 | 21.57 | 22.34 | 22.83 |
|                 | 6H   | 21.26            | 21.90 | 21.78 | 22.42 | 22.93 | 21.97          | 22.62 | 22.50 | 23.14 | 23.65 |
|                 | 8H   | 21.55            | 22.11 | 22.07 | 22.62 | 23.20 | 22.42          | 22.99 | 22.94 | 23.50 | 24.08 |

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

Report Prepared for

Cooper Lighting Solutions

Corelite

Report Number: SP1-2506-458-1

Test Date: 07/23/2025

Luminaire Tested: 22ID2-55-CFR1-L835-U

Data in this report applies to families of products including 22ID2-55-CFR1-L835-U

### Test Information

Test Method: LM-79-2019  
 Report Number: SP1-2506-458-1  
 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-L835-U**  
 Description: 2X2 CGTX WITH INDEPTH FRAME AND CFR1 LENS - 5500 LUMEN 3500K 80CRI

### Spectral Parameters

CCT (K): 3440  
 CIE  $u'$ : 0.2370  
 CIE  $v'$ : 0.5132  
 Duv: 0.0005  
 CIE x: 0.4093  
 CIE y: 0.3940  
 CIE z: 0.1967  
 Peak Wavelength (nm): 599  
 Dominant Wavelength (nm): 580  
 Purity: 41.09375  
 R<sub>f</sub>: 84.9  
 R<sub>g</sub>: 94.6

CRI (Ra): 84.2  
 R1: 82.8  
 R2: 91.7  
 R3: 96.7  
 R4: 81.9  
 R5: 82.6  
 R6: 88.8  
 R7: 85.0  
 R8: 63.7  
 R9: 13.6  
 R10: 80.1  
 R11: 81.1  
 R12: 65.8  
 R13: 85.2  
 R14: 98.7  
 R15: 76.2



### Test Conditions

Stabilization Time: 36M  
 Operation Time: 1H 36M  
 Sphere Temperature (°C): 24.0

REPORT NUMBER: SP1-2506-458-1

| 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: SP1-2506-458-1

**CIE 1931 Chromaticity Diagram**



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



Point lies inside the ANSI 3500K 4-step quadrangle

REPORT NUMBER: SP1-2506-458-1

### Photopic Flux vs. Wavelength



### Photopic Lumens: NR

| $\lambda$<br>(nm) | Power<br>$\text{W}/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) |
|-------------------|-------------------------------|--------------------------------|-------------------|-------------------------------|--------------------------------|-------------------|-------------------------------|--------------------------------|-------------------|-------------------------------|--------------------------------|-------------------|-------------------------------|--------------------------------|
| 360               | 0                             | NR                             | 490               | 295                           | NR                             | 620               | 910                           | NR                             | 750               | 30                            | NR                             | 880               | 1                             | NR                             |
| 365               | 0                             | NR                             | 495               | 335                           | NR                             | 625               | 862                           | NR                             | 755               | 25                            | NR                             | 885               | 1                             | NR                             |
| 370               | 0                             | NR                             | 500               | 390                           | NR                             | 630               | 809                           | NR                             | 760               | 21                            | NR                             | 890               | 1                             | NR                             |
| 375               | 0                             | NR                             | 505               | 445                           | NR                             | 635               | 752                           | NR                             | 765               | 18                            | NR                             | 895               | 0                             | NR                             |
| 380               | 0                             | NR                             | 510               | 490                           | NR                             | 640               | 694                           | NR                             | 770               | 16                            | NR                             | 900               | 0                             | NR                             |
| 385               | 0                             | NR                             | 515               | 532                           | NR                             | 645               | 630                           | NR                             | 775               | 13                            | NR                             | 905               | 0                             | NR                             |
| 390               | 0                             | NR                             | 520               | 563                           | NR                             | 650               | 571                           | NR                             | 780               | 12                            | NR                             | 910               | 0                             | NR                             |
| 395               | 2                             | NR                             | 525               | 588                           | NR                             | 655               | 512                           | NR                             | 785               | 10                            | NR                             | 915               | 0                             | NR                             |
| 400               | 3                             | NR                             | 530               | 609                           | NR                             | 660               | 453                           | NR                             | 790               | 8                             | NR                             | 920               | 0                             | NR                             |
| 405               | 5                             | NR                             | 535               | 631                           | NR                             | 665               | 401                           | NR                             | 795               | 7                             | NR                             | 925               | 0                             | NR                             |
| 410               | 8                             | NR                             | 540               | 654                           | NR                             | 670               | 351                           | NR                             | 800               | 6                             | NR                             | 930               | 0                             | NR                             |
| 415               | 13                            | NR                             | 545               | 677                           | NR                             | 675               | 306                           | NR                             | 805               | 5                             | NR                             | 935               | 0                             | NR                             |
| 420               | 23                            | NR                             | 550               | 702                           | NR                             | 680               | 267                           | NR                             | 810               | 5                             | NR                             | 940               | 0                             | NR                             |
| 425               | 40                            | NR                             | 555               | 734                           | NR                             | 685               | 230                           | NR                             | 815               | 4                             | NR                             | 945               | 0                             | NR                             |
| 430               | 70                            | NR                             | 560               | 767                           | NR                             | 690               | 199                           | NR                             | 820               | 4                             | NR                             | 950               | 0                             | NR                             |
| 435               | 126                           | NR                             | 565               | 802                           | NR                             | 695               | 171                           | NR                             | 825               | 3                             | NR                             | 955               | 0                             | NR                             |
| 440               | 221                           | NR                             | 570               | 838                           | NR                             | 700               | 146                           | NR                             | 830               | 3                             | NR                             | 960               | 0                             | NR                             |
| 445               | 418                           | NR                             | 575               | 875                           | NR                             | 705               | 125                           | NR                             | 835               | 2                             | NR                             | 965               | 0                             | NR                             |
| 450               | 729                           | NR                             | 580               | 913                           | NR                             | 710               | 107                           | NR                             | 840               | 2                             | NR                             | 970               | 0                             | NR                             |
| 455               | 816                           | NR                             | 585               | 946                           | NR                             | 715               | 90                            | NR                             | 845               | 2                             | NR                             | 975               | 0                             | NR                             |
| 460               | 578                           | NR                             | 590               | 976                           | NR                             | 720               | 77                            | NR                             | 850               | 1                             | NR                             | 980               | 0                             | NR                             |
| 465               | 458                           | NR                             | 595               | 992                           | NR                             | 725               | 66                            | NR                             | 855               | 1                             | NR                             | 985               | 0                             | NR                             |
| 470               | 390                           | NR                             | 600               | 999                           | NR                             | 730               | 56                            | NR                             | 860               | 1                             | NR                             | 990               | 0                             | NR                             |
| 475               | 299                           | NR                             | 605               | 995                           | NR                             | 735               | 47                            | NR                             | 865               | 1                             | NR                             | 995               | 0                             | NR                             |
| 480               | 260                           | NR                             | 610               | 975                           | NR                             | 740               | 40                            | NR                             | 870               | 1                             | NR                             | 1000              | 0                             | NR                             |
| 485               | 271                           | NR                             | 615               | 948                           | NR                             | 745               | 34                            | NR                             | 875               | 1                             | NR                             |                   |                               |                                |

REPORT NUMBER: SP1-2506-458-1

### Scotopic Flux vs. Wavelength



Scotopic Lumens: NR

S/P: 1.53

| 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       | 295                         | NR               | 620       | 910                         | NR               | 750       | 30                          | NR               | 880       | 1                           | NR               |
| 365       | 0                           | NR               | 495       | 335                         | NR               | 625       | 862                         | NR               | 755       | 25                          | NR               | 885       | 1                           | NR               |
| 370       | 0                           | NR               | 500       | 390                         | NR               | 630       | 809                         | NR               | 760       | 21                          | NR               | 890       | 1                           | NR               |
| 375       | 0                           | NR               | 505       | 445                         | NR               | 635       | 752                         | NR               | 765       | 18                          | NR               | 895       | 0                           | NR               |
| 380       | 0                           | NR               | 510       | 490                         | NR               | 640       | 694                         | NR               | 770       | 16                          | NR               | 900       | 0                           | NR               |
| 385       | 0                           | NR               | 515       | 532                         | NR               | 645       | 630                         | NR               | 775       | 13                          | NR               | 905       | 0                           | NR               |
| 390       | 0                           | NR               | 520       | 563                         | NR               | 650       | 571                         | NR               | 780       | 12                          | NR               | 910       | 0                           | NR               |
| 395       | 2                           | NR               | 525       | 588                         | NR               | 655       | 512                         | NR               | 785       | 10                          | NR               | 915       | 0                           | NR               |
| 400       | 3                           | NR               | 530       | 609                         | NR               | 660       | 453                         | NR               | 790       | 8                           | NR               | 920       | 0                           | NR               |
| 405       | 5                           | NR               | 535       | 631                         | NR               | 665       | 401                         | NR               | 795       | 7                           | NR               | 925       | 0                           | NR               |
| 410       | 8                           | NR               | 540       | 654                         | NR               | 670       | 351                         | NR               | 800       | 6                           | NR               | 930       | 0                           | NR               |
| 415       | 13                          | NR               | 545       | 677                         | NR               | 675       | 306                         | NR               | 805       | 5                           | NR               | 935       | 0                           | NR               |
| 420       | 23                          | NR               | 550       | 702                         | NR               | 680       | 267                         | NR               | 810       | 5                           | NR               | 940       | 0                           | NR               |
| 425       | 40                          | NR               | 555       | 734                         | NR               | 685       | 230                         | NR               | 815       | 4                           | NR               | 945       | 0                           | NR               |
| 430       | 70                          | NR               | 560       | 767                         | NR               | 690       | 199                         | NR               | 820       | 4                           | NR               | 950       | 0                           | NR               |
| 435       | 126                         | NR               | 565       | 802                         | NR               | 695       | 171                         | NR               | 825       | 3                           | NR               | 955       | 0                           | NR               |
| 440       | 221                         | NR               | 570       | 838                         | NR               | 700       | 146                         | NR               | 830       | 3                           | NR               | 960       | 0                           | NR               |
| 445       | 418                         | NR               | 575       | 875                         | NR               | 705       | 125                         | NR               | 835       | 2                           | NR               | 965       | 0                           | NR               |
| 450       | 729                         | NR               | 580       | 913                         | NR               | 710       | 107                         | NR               | 840       | 2                           | NR               | 970       | 0                           | NR               |
| 455       | 816                         | NR               | 585       | 946                         | NR               | 715       | 90                          | NR               | 845       | 2                           | NR               | 975       | 0                           | NR               |
| 460       | 578                         | NR               | 590       | 976                         | NR               | 720       | 77                          | NR               | 850       | 1                           | NR               | 980       | 0                           | NR               |
| 465       | 458                         | NR               | 595       | 992                         | NR               | 725       | 66                          | NR               | 855       | 1                           | NR               | 985       | 0                           | NR               |
| 470       | 390                         | NR               | 600       | 999                         | NR               | 730       | 56                          | NR               | 860       | 1                           | NR               | 990       | 0                           | NR               |
| 475       | 299                         | NR               | 605       | 995                         | NR               | 735       | 47                          | NR               | 865       | 1                           | NR               | 995       | 0                           | NR               |
| 480       | 260                         | NR               | 610       | 975                         | NR               | 740       | 40                          | NR               | 870       | 1                           | NR               | 1000      | 0                           | NR               |
| 485       | 271                         | NR               | 615       | 948                         | NR               | 745       | 34                          | NR               | 875       | 1                           | NR               |           |                             |                  |

REPORT NUMBER: SP1-2506-458-1

### Melanopic Flux vs. Wavelength



Melanopic Lumens: NR

M/P: 3.07

| 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       | 295                         | NR               | 620       | 910                         | NR               | 750       | 30                          | NR               | 880       | 1                           | NR               |
| 365       | 0                           | NR               | 495       | 335                         | NR               | 625       | 862                         | NR               | 755       | 25                          | NR               | 885       | 1                           | NR               |
| 370       | 0                           | NR               | 500       | 390                         | NR               | 630       | 809                         | NR               | 760       | 21                          | NR               | 890       | 1                           | NR               |
| 375       | 0                           | NR               | 505       | 445                         | NR               | 635       | 752                         | NR               | 765       | 18                          | NR               | 895       | 0                           | NR               |
| 380       | 0                           | NR               | 510       | 490                         | NR               | 640       | 694                         | NR               | 770       | 16                          | NR               | 900       | 0                           | NR               |
| 385       | 0                           | NR               | 515       | 532                         | NR               | 645       | 630                         | NR               | 775       | 13                          | NR               | 905       | 0                           | NR               |
| 390       | 0                           | NR               | 520       | 563                         | NR               | 650       | 571                         | NR               | 780       | 12                          | NR               | 910       | 0                           | NR               |
| 395       | 2                           | NR               | 525       | 588                         | NR               | 655       | 512                         | NR               | 785       | 10                          | NR               | 915       | 0                           | NR               |
| 400       | 3                           | NR               | 530       | 609                         | NR               | 660       | 453                         | NR               | 790       | 8                           | NR               | 920       | 0                           | NR               |
| 405       | 5                           | NR               | 535       | 631                         | NR               | 665       | 401                         | NR               | 795       | 7                           | NR               | 925       | 0                           | NR               |
| 410       | 8                           | NR               | 540       | 654                         | NR               | 670       | 351                         | NR               | 800       | 6                           | NR               | 930       | 0                           | NR               |
| 415       | 13                          | NR               | 545       | 677                         | NR               | 675       | 306                         | NR               | 805       | 5                           | NR               | 935       | 0                           | NR               |
| 420       | 23                          | NR               | 550       | 702                         | NR               | 680       | 267                         | NR               | 810       | 5                           | NR               | 940       | 0                           | NR               |
| 425       | 40                          | NR               | 555       | 734                         | NR               | 685       | 230                         | NR               | 815       | 4                           | NR               | 945       | 0                           | NR               |
| 430       | 70                          | NR               | 560       | 767                         | NR               | 690       | 199                         | NR               | 820       | 4                           | NR               | 950       | 0                           | NR               |
| 435       | 126                         | NR               | 565       | 802                         | NR               | 695       | 171                         | NR               | 825       | 3                           | NR               | 955       | 0                           | NR               |
| 440       | 221                         | NR               | 570       | 838                         | NR               | 700       | 146                         | NR               | 830       | 3                           | NR               | 960       | 0                           | NR               |
| 445       | 418                         | NR               | 575       | 875                         | NR               | 705       | 125                         | NR               | 835       | 2                           | NR               | 965       | 0                           | NR               |
| 450       | 729                         | NR               | 580       | 913                         | NR               | 710       | 107                         | NR               | 840       | 2                           | NR               | 970       | 0                           | NR               |
| 455       | 816                         | NR               | 585       | 946                         | NR               | 715       | 90                          | NR               | 845       | 2                           | NR               | 975       | 0                           | NR               |
| 460       | 578                         | NR               | 590       | 976                         | NR               | 720       | 77                          | NR               | 850       | 1                           | NR               | 980       | 0                           | NR               |
| 465       | 458                         | NR               | 595       | 992                         | NR               | 725       | 66                          | NR               | 855       | 1                           | NR               | 985       | 0                           | NR               |
| 470       | 390                         | NR               | 600       | 999                         | NR               | 730       | 56                          | NR               | 860       | 1                           | NR               | 990       | 0                           | NR               |
| 475       | 299                         | NR               | 605       | 995                         | NR               | 735       | 47                          | NR               | 865       | 1                           | NR               | 995       | 0                           | NR               |
| 480       | 260                         | NR               | 610       | 975                         | NR               | 740       | 40                          | NR               | 870       | 1                           | NR               | 1000      | 0                           | NR               |
| 485       | 271                         | NR               | 615       | 948                         | NR               | 745       | 34                          | NR               | 875       | 1                           | NR               |           |                             |                  |

REPORT NUMBER: SP1-2506-458-1

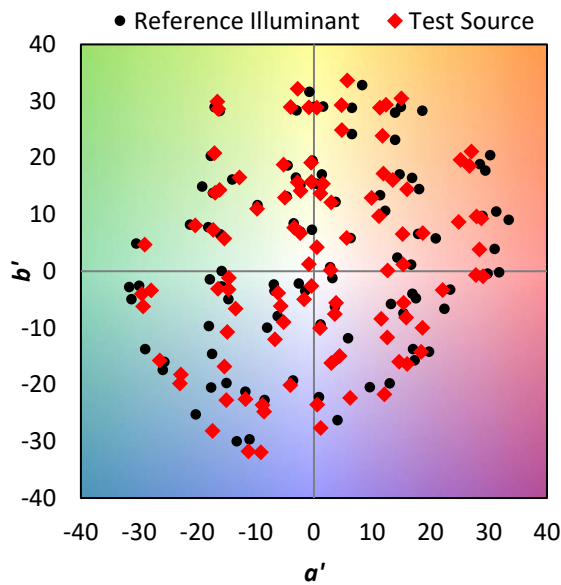
TM-30-18

### Summary

$R_f = 84.9$   
 $R_g = 94.6$   
 $CIE R_a = 84.2$   
 $R_9 = 13.6$



### Color Vector Graphics



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

|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 86 | CES26 = 87 | CES51 = 92 | CES76 = 81 |
| CES02 = 62 | CES27 = 91 | CES52 = 93 | CES77 = 85 |
| CES03 = 31 | CES28 = 94 | CES53 = 90 | CES78 = 80 |
| CES04 = 70 | CES29 = 92 | CES54 = 89 | CES79 = 92 |
| CES05 = 49 | CES30 = 89 | CES55 = 86 | CES80 = 90 |
| CES06 = 51 | CES31 = 94 | CES56 = 85 | CES81 = 77 |
| CES07 = 41 | CES32 = 86 | CES57 = 83 | CES82 = 96 |
| CES08 = 40 | CES33 = 97 | CES58 = 84 | CES83 = 96 |
| CES09 = 29 | CES34 = 91 | CES59 = 91 | CES84 = 91 |
| CES10 = 75 | CES35 = 95 | CES60 = 89 | CES85 = 76 |
| CES11 = 58 | CES36 = 79 | CES61 = 87 | CES86 = 73 |
| CES12 = 64 | CES37 = 95 | CES62 = 81 | CES87 = 85 |
| CES13 = 43 | CES38 = 84 | CES63 = 85 | CES88 = 89 |
| CES14 = 74 | CES39 = 98 | CES64 = 78 | CES89 = 78 |
| CES15 = 71 | CES40 = 97 | CES65 = 78 | CES90 = 90 |
| CES16 = 47 | CES41 = 95 | CES66 = 75 | CES91 = 71 |
| CES17 = 50 | CES42 = 96 | CES67 = 74 | CES92 = 65 |
| CES18 = 56 | CES43 = 92 | CES68 = 79 | CES93 = 79 |
| CES19 = 72 | CES44 = 99 | CES69 = 83 | CES94 = 64 |
| CES20 = 66 | CES45 = 95 | CES70 = 77 | CES95 = 74 |
| CES21 = 86 | CES46 = 91 | CES71 = 71 | CES96 = 85 |
| CES22 = 78 | CES47 = 94 | CES72 = 90 | CES97 = 90 |
| CES23 = 92 | CES48 = 83 | CES73 = 72 | CES98 = 86 |
| CES24 = 90 | CES49 = 92 | CES74 = 90 | CES99 = 79 |
| CES25 = 72 | CES50 = 93 | CES75 = 75 |            |



Color Rendition by Hue-Angle Bin



**Measure Comparisons**



(END OF REPORT)