

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: FAIL-SAFE

Report Number: P562841

Luminaire Tested: FSR-24-4-LD4-2LO-50-UNV-82-88-EDD

Issue Date: 7/20/2021

**Test Information**

Test Method: LM-79-2019  
Report Number: P562841  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-2102-135-5)  
Test Lab: INNOVATION CENTER  
Issue Date: 7/20/2021  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: FAIL-SAFE  
Catalog Number: FSR-24-4-LD4-2LO-50-UNV-82-88-EDD  
Description: 2X4 FSR TROFFER WITH .187 CLEAR PC FIXTURE SIDE AND .500 CLEAR PC ENVIRONMENTAL SI  
LENSES WITH, 80 CRI AND 5000K CCT LEDS  
Light Source: -  
Ballast/Driver: -

**Summary**

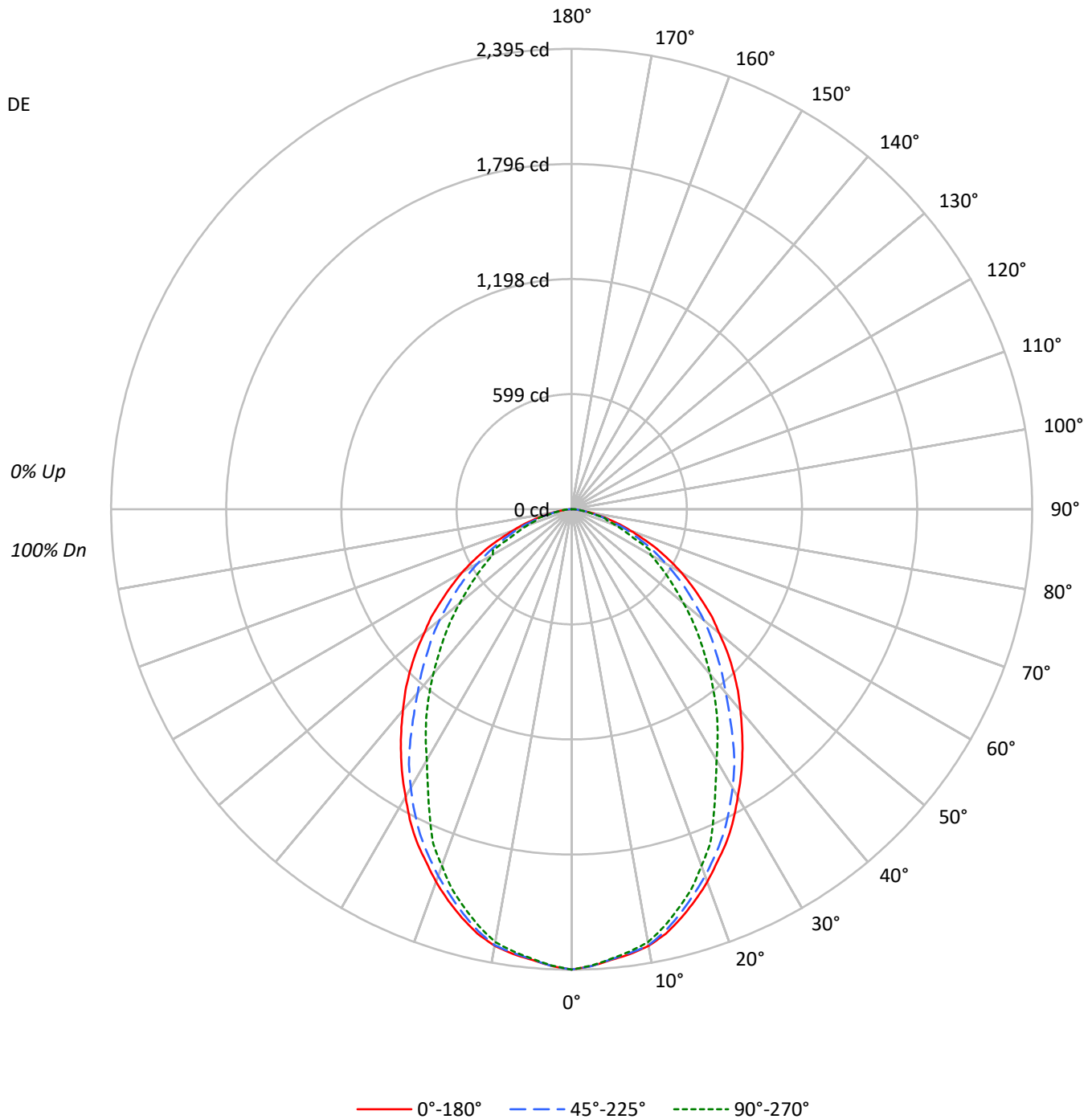
Lumens per Lamp: N/A  
Luminaire Lumens: 4701.0 lumens  
Efficiency: N/A  
Efficacy: 100.4 lumens/watt  
Spacing Criteria (0/90/45): 1.1 / 1 / 1.15  
Luminous Opening: Rectangular (W 2' x L: 4' x H: 0')  
CIE Type: Direct  
  
Input Watts (W): 46.8  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage 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





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

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |    |    |    |    |    |    |    |    |    |    |    |   |     |  |  |  |  |  |    |  |  |  |  |  |  |  |  |   |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|----|----|----|----|----|----|----|----|----|----|---|-----|--|--|--|--|--|----|--|--|--|--|--|--|--|--|---|
| RF  | 20  |     |     |     |     |     |     |     |     | 20  |     |     |     |     |     |     |     |     | 20 |    |    |    |    |    |    |    |    | 20 |    |   |     |  |  |  |  |  | 20 |  |  |  |  |  |  |  |  |   |
| RC  | 80  |     |     |     |     |     |     |     |     | 70  |     |     |     |     |     |     |     |     | 50 |    |    |    |    |    |    |    |    | 30 |    |   |     |  |  |  |  |  | 10 |  |  |  |  |  |  |  |  | 0 |
| RW  | 70  | 50  | 30  | 10  | 70  | 50  | 30  | 10  | 50  | 30  | 10  | 50  | 30  | 10  | 50  | 30  | 10  | 50  | 30 | 10 | 50 | 30 | 10 | 50 | 30 | 10 | 50 | 30 | 10 | 0 |     |  |  |  |  |  |    |  |  |  |  |  |  |  |  |   |
| RCR |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |    |    |    |    |    |    |    |    |    |    |    |   |     |  |  |  |  |  |    |  |  |  |  |  |  |  |  |   |
| 0   | 119 | 119 | 119 | 119 | 116 | 116 | 116 | 116 | 111 | 111 | 111 | 106 | 106 | 106 | 102 | 102 | 102 | 100 |    |    |    |    |    |    |    |    |    |    |    |   | 100 |  |  |  |  |  |    |  |  |  |  |  |  |  |  |   |
| 1   | 110 | 106 | 102 | 99  | 108 | 104 | 100 | 97  | 100 | 97  | 94  | 96  | 94  | 91  | 92  | 90  | 89  | 87  |    |    |    |    |    |    |    |    |    |    |    |   | 87  |  |  |  |  |  |    |  |  |  |  |  |  |  |  |   |
| 2   | 101 | 94  | 88  | 83  | 99  | 92  | 87  | 82  | 89  | 84  | 80  | 86  | 82  | 78  | 83  | 79  | 77  | 75  |    |    |    |    |    |    |    |    |    |    |    |   | 75  |  |  |  |  |  |    |  |  |  |  |  |  |  |  |   |
| 3   | 93  | 84  | 77  | 71  | 91  | 82  | 76  | 70  | 79  | 74  | 69  | 77  | 72  | 68  | 74  | 70  | 67  | 65  |    |    |    |    |    |    |    |    |    |    |    |   | 65  |  |  |  |  |  |    |  |  |  |  |  |  |  |  |   |
| 4   | 86  | 75  | 67  | 61  | 84  | 74  | 66  | 61  | 72  | 65  | 60  | 69  | 64  | 59  | 67  | 62  | 58  | 56  |    |    |    |    |    |    |    |    |    |    |    |   | 56  |  |  |  |  |  |    |  |  |  |  |  |  |  |  |   |
| 5   | 80  | 68  | 60  | 54  | 78  | 67  | 59  | 53  | 65  | 58  | 53  | 63  | 57  | 52  | 61  | 56  | 52  | 50  |    |    |    |    |    |    |    |    |    |    |    |   | 50  |  |  |  |  |  |    |  |  |  |  |  |  |  |  |   |
| 6   | 74  | 62  | 53  | 48  | 72  | 61  | 53  | 47  | 59  | 52  | 47  | 57  | 51  | 47  | 56  | 50  | 46  | 44  |    |    |    |    |    |    |    |    |    |    |    |   | 44  |  |  |  |  |  |    |  |  |  |  |  |  |  |  |   |
| 7   | 69  | 56  | 48  | 43  | 67  | 56  | 48  | 42  | 54  | 47  | 42  | 53  | 46  | 42  | 51  | 46  | 42  | 40  |    |    |    |    |    |    |    |    |    |    |    |   | 40  |  |  |  |  |  |    |  |  |  |  |  |  |  |  |   |
| 8   | 65  | 52  | 44  | 38  | 63  | 51  | 44  | 38  | 50  | 43  | 38  | 49  | 42  | 38  | 48  | 42  | 38  | 36  |    |    |    |    |    |    |    |    |    |    |    |   | 36  |  |  |  |  |  |    |  |  |  |  |  |  |  |  |   |
| 9   | 61  | 48  | 40  | 35  | 59  | 47  | 40  | 35  | 46  | 39  | 35  | 45  | 39  | 34  | 44  | 38  | 34  | 33  |    |    |    |    |    |    |    |    |    |    |    |   | 33  |  |  |  |  |  |    |  |  |  |  |  |  |  |  |   |
| 10  | 57  | 44  | 37  | 32  | 56  | 44  | 37  | 32  | 43  | 36  | 32  | 42  | 36  | 32  | 41  | 36  | 32  | 30  |    |    |    |    |    |    |    |    |    |    |    |   | 30  |  |  |  |  |  |    |  |  |  |  |  |  |  |  |   |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 3222 | 3222 | 3222 |
| 5°  | 3178 | 3174 | 3171 |
| 10° | 3151 | 3147 | 3124 |
| 15° | 3066 | 3035 | 2992 |
| 20° | 2953 | 2905 | 2826 |
| 25° | 2832 | 2770 | 2597 |
| 30° | 2684 | 2598 | 2340 |
| 35° | 2542 | 2401 | 2164 |
| 40° | 2397 | 2188 | 1969 |
| 45° | 2260 | 2023 | 1780 |
| 50° | 2092 | 1877 | 1588 |
| 55° | 1935 | 1701 | 1422 |
| 60° | 1773 | 1520 | 1274 |
| 65° | 1560 | 1331 | 1128 |
| 70° | 1285 | 1165 | 958  |
| 75° | 1022 | 892  | 935  |
| 80° | 687  | 644  | 600  |
| 85° | 428  | 513  | 599  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 2260 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 222.9  | 4.7       |
| 10°-20°   | 611.7  | 13.0      |
| 20°-30°   | 846.9  | 18.0      |
| 30°-40°   | 903.1  | 19.2      |
| 40°-50°   | 823.9  | 17.5      |
| 50°-60°   | 645.4  | 13.7      |
| 60°-70°   | 420.7  | 8.9       |
| 70°-80°   | 186.4  | 4.0       |
| 80°-90°   | 40.0   | 0.9       |
| 90°-100°  | 0.0    | 0.0       |
| 100°-110° | 0.0    | 0.0       |
| 110°-120° | 0.0    | 0.0       |
| 120°-130° | 0.0    | 0.0       |
| 130°-140° | 0.0    | 0.0       |
| 140°-150° | 0.0    | 0.0       |
| 150°-160° | 0.0    | 0.0       |
| 160°-170° | 0.0    | 0.0       |
| 170°-180° | 0.0    | 0.0       |
| 0°-30°    | 1681.6 | 35.8      |
| 0°-40°    | 2584.7 | 55.0      |
| 0°-60°    | 4053.9 | 86.2      |
| 0°-90°    | 4701.0 | 100.0     |
| 90°-120°  | 0.0    | 0.0       |
| 90°-150°  | 0.0    | 0.0       |
| 90°-180°  | 0.0    | 0.0       |
| 0°-180°   | 4701.0 | 100.0     |

**CANDELA DISTRIBUTION:**

|     | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|-----|------|-------|------|-------|------|------|
| 0°  | 2395 | 2395  | 2395 | 2395  | 2395 |      |
| 5°  | 2353 | 2350  | 2350 | 2348  | 2348 | 223  |
| 15° | 2201 | 2201  | 2179 | 2156  | 2148 | 619  |
| 25° | 1907 | 1896  | 1866 | 1799  | 1750 | 876  |
| 35° | 1548 | 1536  | 1462 | 1351  | 1318 | 967  |
| 45° | 1188 | 1163  | 1063 | 974   | 936  | 915  |
| 55° | 825  | 800   | 725  | 640   | 606  | 740  |
| 65° | 490  | 462   | 418  | 426   | 354  | 483  |
| 75° | 197  | 183   | 172  | 163   | 180  | 211  |
| 85° | 28   | 30    | 33   | 36    | 39   | 38   |
| 90° | 0    | 0     | 0    | 0     | 0    |      |



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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|-------|--------|--------|--------|--------|--------|
| 0°    | 2394.6 | 2394.6 | 2394.6 | 2394.6 | 2394.6 |
| 2.5°  | 2378.0 | 2378.0 | 2378.0 | 2375.2 | 2375.2 |
| 5°    | 2353.1 | 2350.3 | 2350.3 | 2347.6 | 2347.6 |
| 7.5°  | 2333.7 | 2331.0 | 2328.2 | 2325.4 | 2319.9 |
| 10°   | 2306.0 | 2306.0 | 2303.3 | 2289.4 | 2286.7 |
| 12.5° | 2261.7 | 2259.0 | 2247.9 | 2228.5 | 2223.0 |
| 15°   | 2200.8 | 2200.8 | 2178.7 | 2156.5 | 2148.2 |
| 17.5° | 2134.4 | 2131.6 | 2103.9 | 2081.8 | 2070.7 |
| 20°   | 2062.4 | 2056.9 | 2029.2 | 1993.2 | 1973.8 |
| 22.5° | 1982.1 | 1982.1 | 1948.9 | 1901.9 | 1882.5 |
| 25°   | 1907.4 | 1896.3 | 1865.9 | 1799.4 | 1749.6 |
| 27.5° | 1821.6 | 1805.0 | 1771.7 | 1677.6 | 1619.5 |
| 30°   | 1727.5 | 1719.1 | 1672.1 | 1550.3 | 1506.0 |
| 32.5° | 1638.9 | 1625.0 | 1575.2 | 1447.8 | 1411.9 |
| 35°   | 1547.5 | 1536.4 | 1461.7 | 1351.0 | 1317.7 |
| 37.5° | 1456.2 | 1442.3 | 1348.2 | 1259.6 | 1218.1 |
| 40°   | 1364.8 | 1348.2 | 1245.8 | 1165.5 | 1121.2 |
| 42.5° | 1279.0 | 1256.8 | 1157.2 | 1071.4 | 1021.5 |
| 45°   | 1187.6 | 1162.7 | 1063.0 | 974.5  | 935.7  |
| 47.5° | 1096.3 | 1074.1 | 982.8  | 891.4  | 847.1  |
| 50°   | 999.4  | 980.0  | 896.9  | 805.6  | 758.5  |
| 52.5° | 919.1  | 888.6  | 808.4  | 717.0  | 678.2  |
| 55°   | 825.0  | 800.1  | 725.3  | 639.5  | 606.3  |
| 57.5° | 739.2  | 714.2  | 645.0  | 564.7  | 537.1  |
| 60°   | 658.9  | 622.9  | 564.7  | 495.5  | 473.4  |
| 62.5° | 570.3  | 542.6  | 492.8  | 434.6  | 462.3  |
| 65°   | 490.0  | 462.3  | 418.0  | 426.3  | 354.3  |
| 67.5° | 401.4  | 387.6  | 348.8  | 310.1  | 299.0  |
| 70°   | 326.7  | 310.1  | 296.2  | 254.7  | 243.6  |
| 72.5° | 260.2  | 243.6  | 224.2  | 202.1  | 193.8  |
| 75°   | 196.6  | 182.7  | 171.6  | 163.3  | 179.9  |
| 77.5° | 135.6  | 130.1  | 121.8  | 113.5  | 110.7  |
| 80°   | 88.6   | 85.8   | 83.1   | 80.3   | 77.5   |
| 82.5° | 52.6   | 52.6   | 52.6   | 52.6   | 52.6   |
| 85°   | 27.7   | 30.5   | 33.2   | 36.0   | 38.8   |
| 87.5° | 16.6   | 16.6   | 19.4   | 22.1   | 24.9   |
| 90°   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |

(END OF REPORT)