

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: P563969

Luminaire Tested: FSR-24-4-LD4-4LO-50-UNV-81-84-EDD

Issue Date: 7/20/2021

**Test Information**

Test Method: LM-79-2019  
Report Number: P563969  
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-LD4-4LO-50-UNV-81-84-EDD  
Description: 2X4 FSR TROFFER WITH .156 CLEAR PC FIXTURE SIDE AND .125 CLEAR PC ENVIRONMENTAL SI  
LENSES WITH, 80 CRI AND 5000K CCT LEDS  
Light Source: -  
Ballast/Driver: -

**Summary**

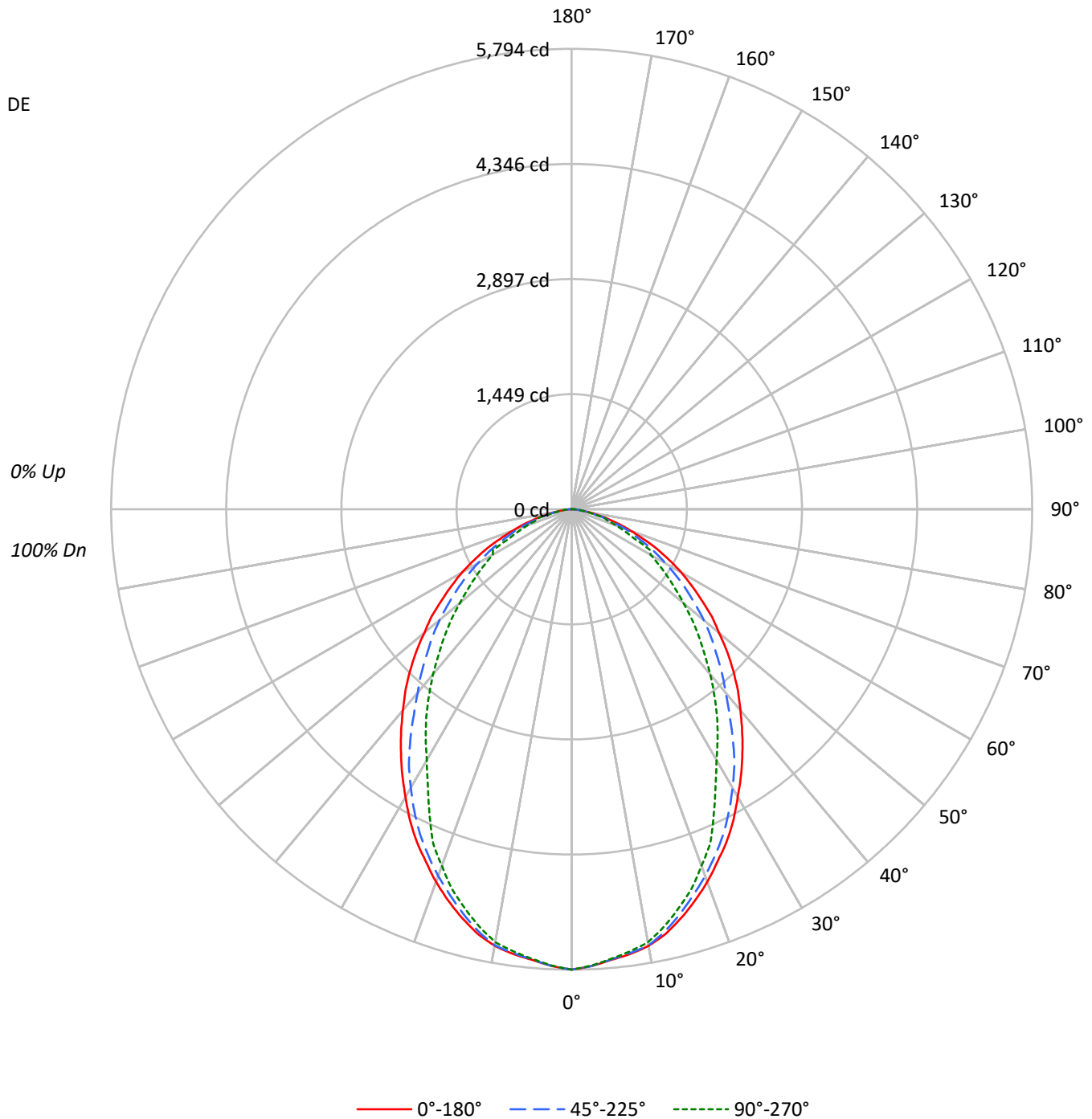
Lumens per Lamp: N/A  
Luminaire Lumens: 11374.0 lumens  
Efficiency: N/A  
Efficacy: 121.5 lumens/watt  
Spacing Criteria (0/90/45): 1.1 / 1 / 1.15  
Luminous Opening: Rectangular (W 2' x L: 4' x H: 0')  
CIE Type: Direct  
  
Input Watts (W): 93.6  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage 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  | 0   |
| RCR |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| 0   | 119 | 119 | 119 | 119 | 116 | 116 | 116 | 116 | 111 | 111 | 111 | 106 | 106 | 106 | 102 | 102 | 102 | 100 |
| 1   | 110 | 106 | 102 | 99  | 108 | 104 | 100 | 97  | 100 | 97  | 94  | 96  | 94  | 91  | 92  | 90  | 89  | 87  |
| 2   | 101 | 94  | 88  | 83  | 99  | 92  | 87  | 82  | 89  | 84  | 80  | 86  | 82  | 78  | 83  | 79  | 77  | 75  |
| 3   | 93  | 84  | 77  | 71  | 91  | 82  | 76  | 70  | 79  | 74  | 69  | 77  | 72  | 68  | 74  | 70  | 67  | 65  |
| 4   | 86  | 75  | 67  | 61  | 84  | 74  | 66  | 61  | 72  | 65  | 60  | 69  | 64  | 59  | 67  | 62  | 58  | 56  |
| 5   | 80  | 68  | 60  | 54  | 78  | 67  | 59  | 53  | 65  | 58  | 53  | 63  | 57  | 52  | 61  | 56  | 52  | 50  |
| 6   | 74  | 62  | 53  | 48  | 72  | 61  | 53  | 47  | 59  | 52  | 47  | 57  | 51  | 47  | 56  | 50  | 46  | 44  |
| 7   | 69  | 56  | 48  | 43  | 67  | 56  | 48  | 42  | 54  | 47  | 42  | 53  | 46  | 42  | 51  | 46  | 42  | 40  |
| 8   | 65  | 52  | 44  | 38  | 63  | 51  | 44  | 38  | 50  | 43  | 38  | 49  | 42  | 38  | 48  | 42  | 38  | 36  |
| 9   | 61  | 48  | 40  | 35  | 59  | 47  | 40  | 35  | 46  | 39  | 35  | 45  | 39  | 34  | 44  | 38  | 34  | 33  |
| 10  | 57  | 44  | 37  | 32  | 56  | 44  | 37  | 32  | 43  | 36  | 32  | 42  | 36  | 32  | 41  | 36  | 32  | 30  |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 7795 | 7795 | 7795 |
| 5°  | 7690 | 7680 | 7671 |
| 10° | 7623 | 7614 | 7559 |
| 15° | 7417 | 7343 | 7240 |
| 20° | 7145 | 7030 | 6838 |
| 25° | 6851 | 6702 | 6284 |
| 30° | 6493 | 6285 | 5661 |
| 35° | 6150 | 5809 | 5237 |
| 40° | 5800 | 5294 | 4765 |
| 45° | 5468 | 4894 | 4308 |
| 50° | 5061 | 4542 | 3841 |
| 55° | 4682 | 4117 | 3441 |
| 60° | 4290 | 3677 | 3082 |
| 65° | 3774 | 3220 | 2729 |
| 70° | 3109 | 2819 | 2319 |
| 75° | 2472 | 2159 | 2263 |
| 80° | 1660 | 1557 | 1453 |
| 85° | 1034 | 1241 | 1448 |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 5468 cd/sqm



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**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 539.3   | 4.7       |
| 10°-20°   | 1480.1  | 13.0      |
| 20°-30°   | 2049.1  | 18.0      |
| 30°-40°   | 2185.0  | 19.2      |
| 40°-50°   | 1993.3  | 17.5      |
| 50°-60°   | 1561.6  | 13.7      |
| 60°-70°   | 1017.8  | 8.9       |
| 70°-80°   | 450.9   | 4.0       |
| 80°-90°   | 96.8    | 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°    | 4068.6  | 35.8      |
| 0°-40°    | 6253.5  | 55.0      |
| 0°-60°    | 9808.5  | 86.2      |
| 0°-90°    | 11374.0 | 100.0     |
| 90°-120°  | 0.0     | 0.0       |
| 90°-150°  | 0.0     | 0.0       |
| 90°-180°  | 0.0     | 0.0       |
| 0°-180°   | 11374.0 | 100.0     |

**CANDELA DISTRIBUTION:**

|     | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|-----|------|-------|------|-------|------|------|
| 0°  | 5794 | 5794  | 5794 | 5794  | 5794 |      |
| 5°  | 5693 | 5687  | 5687 | 5680  | 5680 | 540  |
| 15° | 5325 | 5325  | 5271 | 5218  | 5198 | 1497 |
| 25° | 4615 | 4588  | 4514 | 4354  | 4233 | 2119 |
| 35° | 3744 | 3717  | 3536 | 3269  | 3188 | 2341 |
| 45° | 2873 | 2813  | 2572 | 2358  | 2264 | 2213 |
| 55° | 1996 | 1936  | 1755 | 1547  | 1467 | 1790 |
| 65° | 1186 | 1119  | 1011 | 1032  | 857  | 1168 |
| 75° | 476  | 442   | 415  | 395   | 435  | 510  |
| 85° | 67   | 74    | 80   | 87    | 94   | 93   |
| 90° | 0    | 0     | 0    | 0     | 0    |      |



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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|-------|--------|--------|--------|--------|--------|
| 0°    | 5793.8 | 5793.8 | 5793.8 | 5793.8 | 5793.8 |
| 2.5°  | 5753.6 | 5753.6 | 5753.6 | 5746.9 | 5746.9 |
| 5°    | 5693.3 | 5686.6 | 5686.6 | 5679.9 | 5679.9 |
| 7.5°  | 5646.4 | 5639.7 | 5633.0 | 5626.3 | 5612.9 |
| 10°   | 5579.4 | 5579.4 | 5572.7 | 5539.2 | 5532.5 |
| 12.5° | 5472.3 | 5465.6 | 5438.8 | 5391.9 | 5378.5 |
| 15°   | 5324.9 | 5324.9 | 5271.3 | 5217.7 | 5197.6 |
| 17.5° | 5164.2 | 5157.5 | 5090.5 | 5036.9 | 5010.1 |
| 20°   | 4990.0 | 4976.6 | 4909.6 | 4822.6 | 4775.7 |
| 22.5° | 4795.8 | 4795.8 | 4715.4 | 4601.5 | 4554.6 |
| 25°   | 4614.9 | 4588.1 | 4514.4 | 4353.7 | 4233.1 |
| 27.5° | 4407.3 | 4367.1 | 4286.7 | 4059.0 | 3918.3 |
| 30°   | 4179.5 | 4159.5 | 4045.6 | 3750.9 | 3643.7 |
| 32.5° | 3965.2 | 3931.7 | 3811.2 | 3503.1 | 3416.0 |
| 35°   | 3744.2 | 3717.4 | 3536.5 | 3268.6 | 3188.2 |
| 37.5° | 3523.1 | 3489.7 | 3261.9 | 3047.6 | 2947.1 |
| 40°   | 3302.1 | 3261.9 | 3014.1 | 2819.9 | 2712.7 |
| 42.5° | 3094.5 | 3040.9 | 2799.8 | 2592.1 | 2471.6 |
| 45°   | 2873.4 | 2813.2 | 2572.0 | 2357.7 | 2263.9 |
| 47.5° | 2652.4 | 2598.8 | 2377.8 | 2156.8 | 2049.6 |
| 50°   | 2418.0 | 2371.1 | 2170.1 | 1949.1 | 1835.2 |
| 52.5° | 2223.7 | 2150.1 | 1955.8 | 1734.8 | 1641.0 |
| 55°   | 1996.0 | 1935.7 | 1754.9 | 1547.2 | 1466.9 |
| 57.5° | 1788.4 | 1728.1 | 1560.6 | 1366.4 | 1299.4 |
| 60°   | 1594.1 | 1507.0 | 1366.4 | 1198.9 | 1145.4 |
| 62.5° | 1379.8 | 1312.8 | 1192.2 | 1051.6 | 1118.6 |
| 65°   | 1185.5 | 1118.6 | 1011.4 | 1031.5 | 857.3  |
| 67.5° | 971.2  | 937.7  | 843.9  | 750.2  | 723.4  |
| 70°   | 790.4  | 750.2  | 716.7  | 616.2  | 589.4  |
| 72.5° | 629.6  | 589.4  | 542.5  | 489.0  | 468.9  |
| 75°   | 475.6  | 442.1  | 415.3  | 395.2  | 435.4  |
| 77.5° | 328.2  | 314.8  | 294.7  | 274.6  | 267.9  |
| 80°   | 214.3  | 207.6  | 200.9  | 194.2  | 187.5  |
| 82.5° | 127.3  | 127.3  | 127.3  | 127.3  | 127.3  |
| 85°   | 67.0   | 73.7   | 80.4   | 87.1   | 93.8   |
| 87.5° | 40.2   | 40.2   | 46.9   | 53.6   | 60.3   |
| 90°   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |

(END OF REPORT)