

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: P563604

Luminaire Tested: FSR-24-4-LD4-3STD-50-UNV-82-86-EDD-90

Issue Date: 7/20/2021

**Test Information**

Test Method: LM-79-2019  
Report Number: P563604  
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-LD4-3STD-50-UNV-82-86-EDD-90  
Description: 2X4 FSR TROFFER WITH .187 CLEAR PC FIXTURE SIDE AND .250 CLEAR PC ENVIRONMENTAL SI  
LENSES WITH, 90 CRI AND 5000K CCT LEDS  
Light Source: -  
Ballast/Driver: -

**Summary**

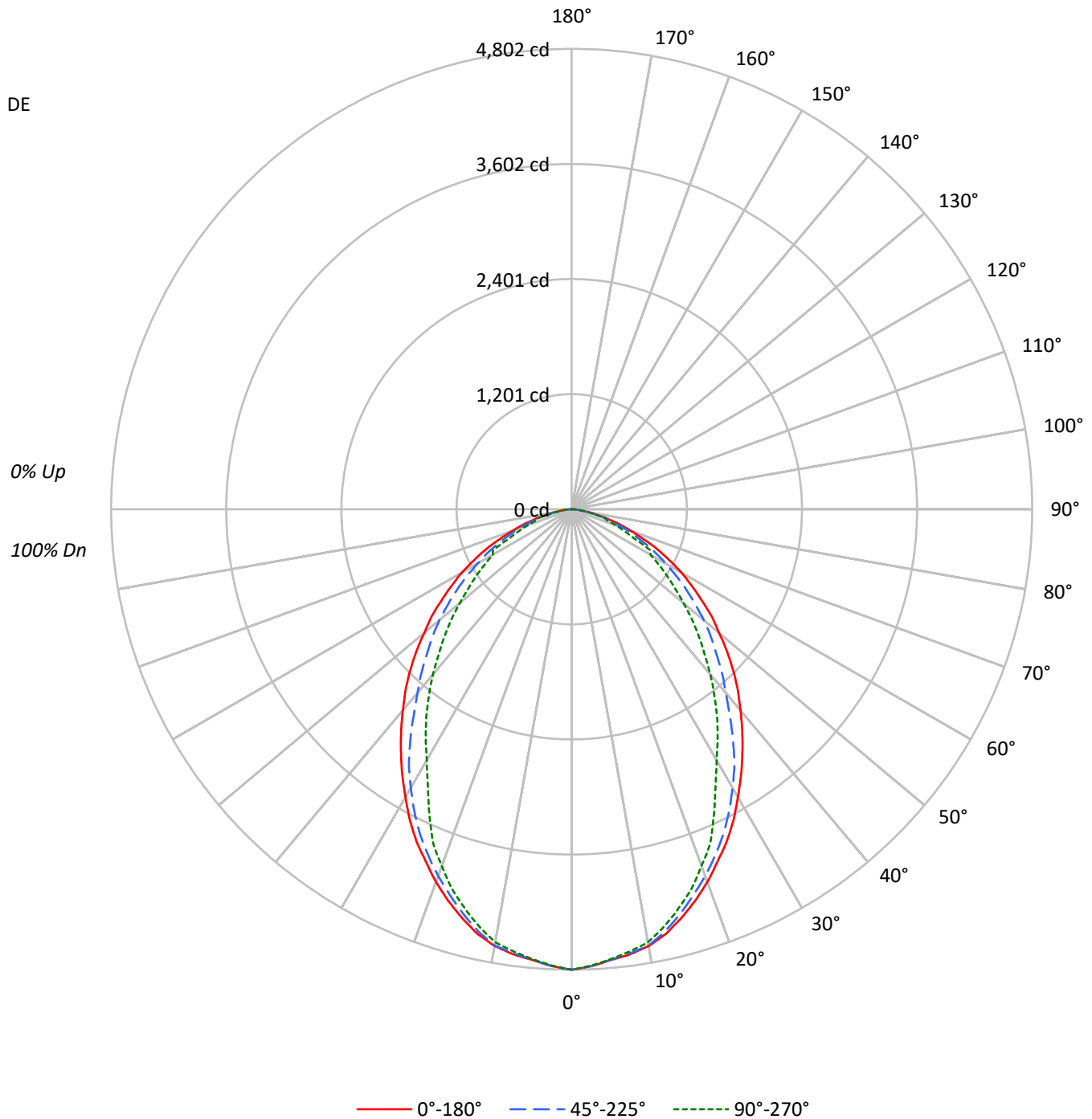
Lumens per Lamp: N/A  
Luminaire Lumens: 9428.0 lumens  
Efficiency: N/A  
Efficacy: 94.4 lumens/watt  
Spacing Criteria (0/90/45): 1.1 / 1 / 1.15  
Luminous Opening: Rectangular (W 2' x L: 4' x H: 0')  
CIE Type: Direct  
  
Input Watts (W): 99.9  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage 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 | 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°  | 6462 | 6462 | 6462 |
| 5°  | 6374 | 6366 | 6359 |
| 10° | 6319 | 6311 | 6266 |
| 15° | 6148 | 6086 | 6001 |
| 20° | 5923 | 5827 | 5668 |
| 25° | 5679 | 5555 | 5209 |
| 30° | 5383 | 5210 | 4692 |
| 35° | 5098 | 4815 | 4341 |
| 40° | 4807 | 4388 | 3949 |
| 45° | 4532 | 4057 | 3571 |
| 50° | 4195 | 3765 | 3184 |
| 55° | 3881 | 3412 | 2852 |
| 60° | 3556 | 3048 | 2555 |
| 65° | 3129 | 2669 | 2263 |
| 70° | 2577 | 2337 | 1922 |
| 75° | 2049 | 1789 | 1876 |
| 80° | 1377 | 1291 | 1205 |
| 85° | 857  | 1028 | 1200 |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 4532 cd/sqm



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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 447.0  | 4.7       |
| 10°-20°   | 1226.9 | 13.0      |
| 20°-30°   | 1698.5 | 18.0      |
| 30°-40°   | 1811.1 | 19.2      |
| 40°-50°   | 1652.3 | 17.5      |
| 50°-60°   | 1294.4 | 13.7      |
| 60°-70°   | 843.7  | 8.9       |
| 70°-80°   | 373.8  | 4.0       |
| 80°-90°   | 80.3   | 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°    | 3372.5 | 35.8      |
| 0°-40°    | 5183.6 | 55.0      |
| 0°-60°    | 8130.3 | 86.2      |
| 0°-90°    | 9428.0 | 100.0     |
| 90°-120°  | 0.0    | 0.0       |
| 90°-150°  | 0.0    | 0.0       |
| 90°-180°  | 0.0    | 0.0       |
| 0°-180°   | 9428.0 | 100.0     |

**CANDELA DISTRIBUTION:**

|     | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|-----|------|-------|------|-------|------|------|
| 0°  | 4802 | 4802  | 4802 | 4802  | 4802 |      |
| 5°  | 4719 | 4714  | 4714 | 4708  | 4708 | 448  |
| 15° | 4414 | 4414  | 4369 | 4325  | 4308 | 1241 |
| 25° | 3825 | 3803  | 3742 | 3609  | 3509 | 1756 |
| 35° | 3104 | 3081  | 2932 | 2709  | 2643 | 1940 |
| 45° | 2382 | 2332  | 2132 | 1954  | 1877 | 1835 |
| 55° | 1654 | 1604  | 1455 | 1282  | 1216 | 1484 |
| 65° | 983  | 927   | 838  | 855   | 711  | 968  |
| 75° | 394  | 366   | 344  | 328   | 361  | 422  |
| 85° | 56   | 61    | 67   | 72    | 78   | 77   |
| 90° | 0    | 0     | 0    | 0     | 0    |      |



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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|-------|--------|--------|--------|--------|--------|
| 0°    | 4802.5 | 4802.5 | 4802.5 | 4802.5 | 4802.5 |
| 2.5°  | 4769.2 | 4769.2 | 4769.2 | 4763.6 | 4763.6 |
| 5°    | 4719.2 | 4713.7 | 4713.7 | 4708.1 | 4708.1 |
| 7.5°  | 4680.4 | 4674.8 | 4669.2 | 4663.7 | 4652.6 |
| 10°   | 4624.8 | 4624.8 | 4619.3 | 4591.5 | 4586.0 |
| 12.5° | 4536.0 | 4530.4 | 4508.2 | 4469.4 | 4458.3 |
| 15°   | 4413.9 | 4413.9 | 4369.4 | 4325.0 | 4308.4 |
| 17.5° | 4280.6 | 4275.1 | 4219.5 | 4175.1 | 4152.9 |
| 20°   | 4136.3 | 4125.2 | 4069.6 | 3997.5 | 3958.6 |
| 22.5° | 3975.2 | 3975.2 | 3908.6 | 3814.2 | 3775.4 |
| 25°   | 3825.3 | 3803.1 | 3742.1 | 3608.8 | 3508.9 |
| 27.5° | 3653.2 | 3619.9 | 3553.3 | 3364.5 | 3247.9 |
| 30°   | 3464.5 | 3447.8 | 3353.4 | 3109.1 | 3020.3 |
| 32.5° | 3286.8 | 3259.0 | 3159.1 | 2903.7 | 2831.5 |
| 35°   | 3103.6 | 3081.4 | 2931.5 | 2709.4 | 2642.8 |
| 37.5° | 2920.4 | 2892.6 | 2703.8 | 2526.2 | 2442.9 |
| 40°   | 2737.1 | 2703.8 | 2498.4 | 2337.4 | 2248.6 |
| 42.5° | 2565.0 | 2520.6 | 2320.7 | 2148.6 | 2048.7 |
| 45°   | 2381.8 | 2331.8 | 2132.0 | 1954.3 | 1876.6 |
| 47.5° | 2198.6 | 2154.2 | 1971.0 | 1787.8 | 1698.9 |
| 50°   | 2004.3 | 1965.4 | 1798.9 | 1615.6 | 1521.3 |
| 52.5° | 1843.3 | 1782.2 | 1621.2 | 1438.0 | 1360.2 |
| 55°   | 1654.5 | 1604.5 | 1454.6 | 1282.5 | 1215.9 |
| 57.5° | 1482.4 | 1432.4 | 1293.6 | 1132.6 | 1077.1 |
| 60°   | 1321.4 | 1249.2 | 1132.6 | 993.8  | 949.4  |
| 62.5° | 1143.7 | 1088.2 | 988.3  | 871.7  | 927.2  |
| 65°   | 982.7  | 927.2  | 838.4  | 855.0  | 710.7  |
| 67.5° | 805.0  | 777.3  | 699.6  | 621.8  | 599.6  |
| 70°   | 655.1  | 621.8  | 594.1  | 510.8  | 488.6  |
| 72.5° | 521.9  | 488.6  | 449.7  | 405.3  | 388.6  |
| 75°   | 394.2  | 366.4  | 344.2  | 327.6  | 360.9  |
| 77.5° | 272.0  | 260.9  | 244.3  | 227.6  | 222.1  |
| 80°   | 177.7  | 172.1  | 166.6  | 161.0  | 155.5  |
| 82.5° | 105.5  | 105.5  | 105.5  | 105.5  | 105.5  |
| 85°   | 55.5   | 61.1   | 66.6   | 72.2   | 77.7   |
| 87.5° | 33.3   | 33.3   | 38.9   | 44.4   | 50.0   |
| 90°   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |

(END OF REPORT)