

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: P563476

Luminaire Tested: FSR-24-4-LD4-3STD-35-UNV-82-86-EDD-90

Issue Date: 7/20/2021

**Test Information**

Test Method: LM-79-2019  
Report Number: P563476  
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-35-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 3500K CCT LEDS  
Light Source: -  
Ballast/Driver: -

**Summary**

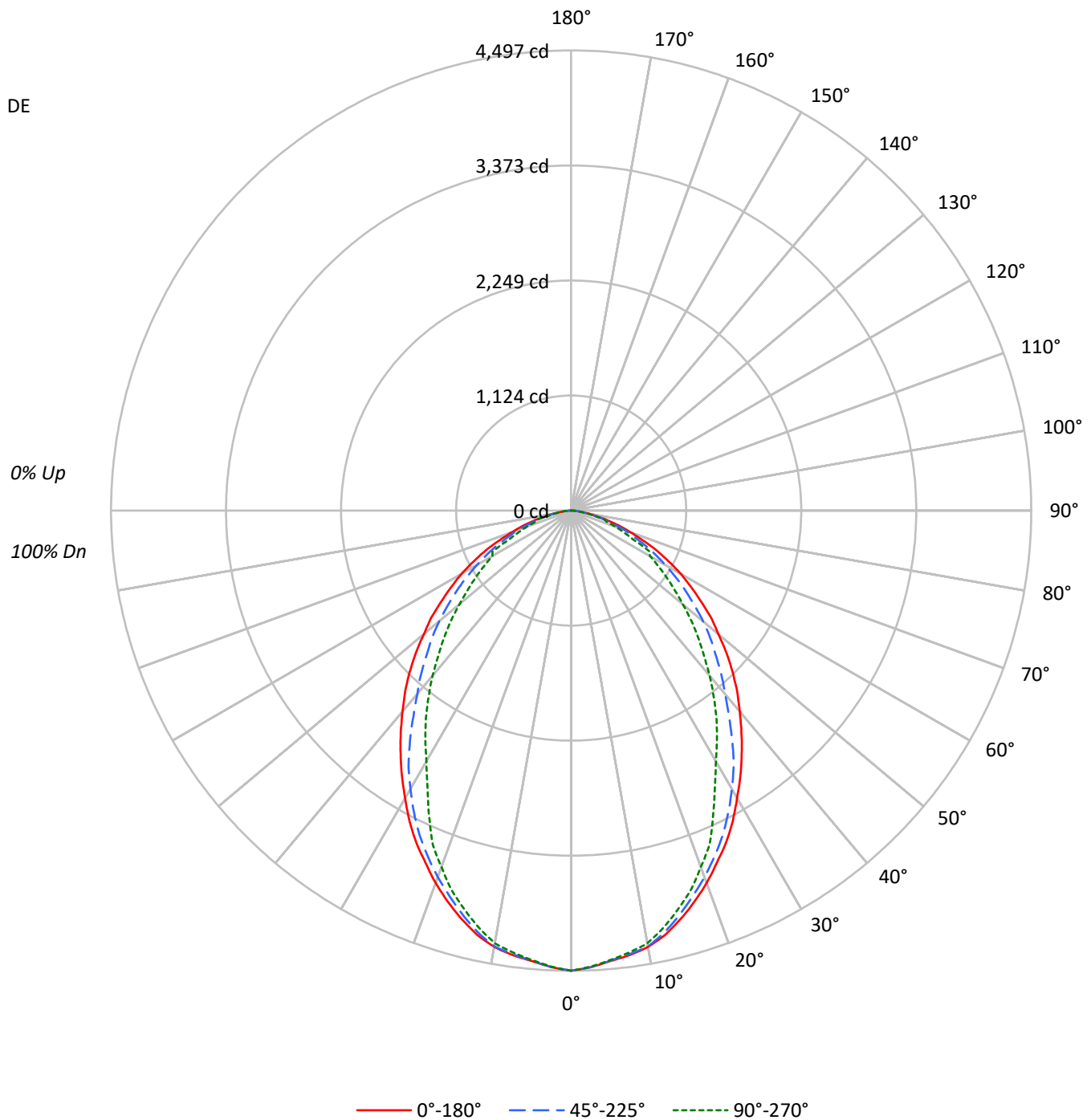
Lumens per Lamp: N/A  
Luminaire Lumens: 8828.0 lumens  
Efficiency: N/A  
Efficacy: 88.4 lumens/watt  
Spacing Criteria (0/90/45): 1.1 / 1 / 1.15  
Luminous Opening: Rectangular (W 2' x L: 4' x H: 0')  
CIE Type: Direct  
  
Input Watts (W): 99.9  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage 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 | 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°  | 6051 | 6051 | 6051 |
| 5°  | 5968 | 5961 | 5954 |
| 10° | 5917 | 5909 | 5867 |
| 15° | 5757 | 5699 | 5619 |
| 20° | 5546 | 5456 | 5307 |
| 25° | 5318 | 5202 | 4878 |
| 30° | 5040 | 4878 | 4394 |
| 35° | 4773 | 4509 | 4065 |
| 40° | 4502 | 4109 | 3698 |
| 45° | 4244 | 3799 | 3344 |
| 50° | 3928 | 3526 | 2982 |
| 55° | 3634 | 3195 | 2671 |
| 60° | 3330 | 2854 | 2392 |
| 65° | 2930 | 2499 | 2118 |
| 70° | 2413 | 2188 | 1800 |
| 75° | 1919 | 1675 | 1757 |
| 80° | 1289 | 1209 | 1128 |
| 85° | 803  | 963  | 1124 |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 4244 cd/sqm



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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 418.6  | 4.7       |
| 10°-20°   | 1148.8 | 13.0      |
| 20°-30°   | 1590.4 | 18.0      |
| 30°-40°   | 1695.9 | 19.2      |
| 40°-50°   | 1547.1 | 17.5      |
| 50°-60°   | 1212.1 | 13.7      |
| 60°-70°   | 790.0  | 8.9       |
| 70°-80°   | 350.0  | 4.0       |
| 80°-90°   | 75.2   | 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°    | 3157.8 | 35.8      |
| 0°-40°    | 4853.7 | 55.0      |
| 0°-60°    | 7612.9 | 86.2      |
| 0°-90°    | 8828.0 | 100.0     |
| 90°-120°  | 0.0    | 0.0       |
| 90°-150°  | 0.0    | 0.0       |
| 90°-180°  | 0.0    | 0.0       |
| 0°-180°   | 8828.0 | 100.0     |

**CANDELA DISTRIBUTION:**

|     | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|-----|------|-------|------|-------|------|------|
| 0°  | 4497 | 4497  | 4497 | 4497  | 4497 |      |
| 5°  | 4419 | 4414  | 4414 | 4408  | 4408 | 419  |
| 15° | 4133 | 4133  | 4091 | 4050  | 4034 | 1162 |
| 25° | 3582 | 3561  | 3504 | 3379  | 3286 | 1644 |
| 35° | 2906 | 2885  | 2745 | 2537  | 2475 | 1817 |
| 45° | 2230 | 2183  | 1996 | 1830  | 1757 | 1718 |
| 55° | 1549 | 1502  | 1362 | 1201  | 1138 | 1390 |
| 65° | 920  | 868   | 785  | 801   | 665  | 907  |
| 75° | 369  | 343   | 322  | 307   | 338  | 396  |
| 85° | 52   | 57    | 62   | 68    | 73   | 72   |
| 90° | 0    | 0     | 0    | 0     | 0    |      |



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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|-------|--------|--------|--------|--------|--------|
| 0°    | 4496.9 | 4496.9 | 4496.9 | 4496.9 | 4496.9 |
| 2.5°  | 4465.7 | 4465.7 | 4465.7 | 4460.5 | 4460.5 |
| 5°    | 4418.9 | 4413.7 | 4413.7 | 4408.5 | 4408.5 |
| 7.5°  | 4382.5 | 4377.3 | 4372.1 | 4366.9 | 4356.5 |
| 10°   | 4330.5 | 4330.5 | 4325.3 | 4299.3 | 4294.1 |
| 12.5° | 4247.3 | 4242.1 | 4221.3 | 4184.9 | 4174.5 |
| 15°   | 4133.0 | 4133.0 | 4091.4 | 4049.8 | 4034.2 |
| 17.5° | 4008.2 | 4003.0 | 3951.0 | 3909.4 | 3888.6 |
| 20°   | 3873.0 | 3862.6 | 3810.6 | 3743.1 | 3706.7 |
| 22.5° | 3722.3 | 3722.3 | 3659.9 | 3571.5 | 3535.1 |
| 25°   | 3581.9 | 3561.1 | 3503.9 | 3379.1 | 3285.6 |
| 27.5° | 3420.7 | 3389.5 | 3327.2 | 3150.4 | 3041.2 |
| 30°   | 3244.0 | 3228.4 | 3140.0 | 2911.3 | 2828.1 |
| 32.5° | 3077.6 | 3051.6 | 2958.1 | 2718.9 | 2651.3 |
| 35°   | 2906.1 | 2885.3 | 2744.9 | 2537.0 | 2474.6 |
| 37.5° | 2734.5 | 2708.5 | 2531.8 | 2365.4 | 2287.4 |
| 40°   | 2563.0 | 2531.8 | 2339.4 | 2188.6 | 2105.5 |
| 42.5° | 2401.8 | 2360.2 | 2173.1 | 2011.9 | 1918.3 |
| 45°   | 2230.2 | 2183.4 | 1996.3 | 1829.9 | 1757.2 |
| 47.5° | 2058.7 | 2017.1 | 1845.5 | 1674.0 | 1590.8 |
| 50°   | 1876.7 | 1840.3 | 1684.4 | 1512.8 | 1424.4 |
| 52.5° | 1726.0 | 1668.8 | 1518.0 | 1346.5 | 1273.7 |
| 55°   | 1549.2 | 1502.4 | 1362.1 | 1200.9 | 1138.5 |
| 57.5° | 1388.0 | 1341.3 | 1211.3 | 1060.5 | 1008.5 |
| 60°   | 1237.3 | 1169.7 | 1060.5 | 930.6  | 889.0  |
| 62.5° | 1070.9 | 1018.9 | 925.4  | 816.2  | 868.2  |
| 65°   | 920.2  | 868.2  | 785.0  | 800.6  | 665.4  |
| 67.5° | 753.8  | 727.8  | 655.0  | 582.3  | 561.5  |
| 70°   | 613.4  | 582.3  | 556.3  | 478.3  | 457.5  |
| 72.5° | 488.7  | 457.5  | 421.1  | 379.5  | 363.9  |
| 75°   | 369.1  | 343.1  | 322.3  | 306.7  | 337.9  |
| 77.5° | 254.7  | 244.3  | 228.7  | 213.1  | 207.9  |
| 80°   | 166.4  | 161.2  | 156.0  | 150.8  | 145.6  |
| 82.5° | 98.8   | 98.8   | 98.8   | 98.8   | 98.8   |
| 85°   | 52.0   | 57.2   | 62.4   | 67.6   | 72.8   |
| 87.5° | 31.2   | 31.2   | 36.4   | 41.6   | 46.8   |
| 90°   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |

(END OF REPORT)