

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: P563203

Luminaire Tested: FSR-24-4-LD4-3HI-50-UNV-81-85-EDD

Issue Date: 7/20/2021

**Test Information**

Test Method: LM-79-2019  
Report Number: P563203  
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-LD4-3HI-50-UNV-81-85-EDD  
Description: 2X4 FSR TROFFER WITH .156 CLEAR PC FIXTURE SIDE AND .187 CLEAR PC ENVIRONMENTAL SI  
LENSES WITH, 80 CRI AND 5000K CCT LEDS  
Light Source: -  
Ballast/Driver: -

**Summary**

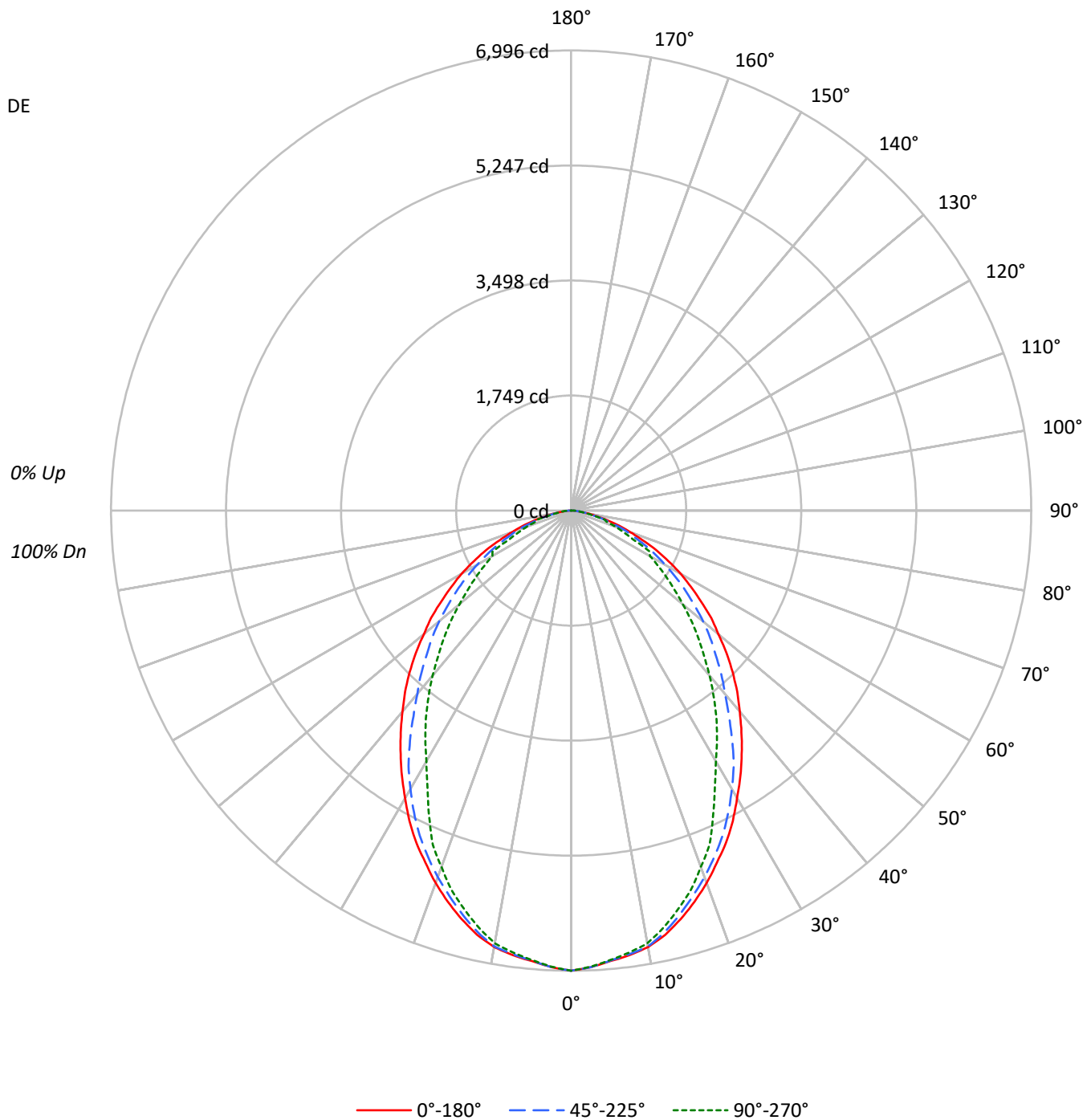
Lumens per Lamp: N/A  
Luminaire Lumens: 13734.0 lumens  
Efficiency: N/A  
Efficacy: 106.0 lumens/watt  
Spacing Criteria (0/90/45): 1.1 / 1 / 1.15  
Luminous Opening: Rectangular (W 2' x L: 4' x H: 0')  
CIE Type: Direct  
  
Input Watts (W): 129.6  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage 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  | 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°  | 9413 | 9413 | 9413 |
| 5°  | 9285 | 9274 | 9263 |
| 10° | 9205 | 9193 | 9127 |
| 15° | 8956 | 8866 | 8742 |
| 20° | 8627 | 8488 | 8257 |
| 25° | 8273 | 8093 | 7588 |
| 30° | 7841 | 7590 | 6836 |
| 35° | 7426 | 7014 | 6323 |
| 40° | 7003 | 6392 | 5753 |
| 45° | 6602 | 5910 | 5202 |
| 50° | 6112 | 5485 | 4639 |
| 55° | 5654 | 4971 | 4155 |
| 60° | 5180 | 4440 | 3722 |
| 65° | 4557 | 3888 | 3296 |
| 70° | 3755 | 3404 | 2800 |
| 75° | 2985 | 2607 | 2733 |
| 80° | 2005 | 1880 | 1755 |
| 85° | 1249 | 1499 | 1748 |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 6602 cd/sqm



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**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 651.2   | 4.7       |
| 10°-20°   | 1787.2  | 13.0      |
| 20°-30°   | 2474.3  | 18.0      |
| 30°-40°   | 2638.3  | 19.2      |
| 40°-50°   | 2406.9  | 17.5      |
| 50°-60°   | 1885.6  | 13.7      |
| 60°-70°   | 1229.0  | 8.9       |
| 70°-80°   | 544.5   | 4.0       |
| 80°-90°   | 116.9   | 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°    | 4912.8  | 35.8      |
| 0°-40°    | 7551.1  | 55.0      |
| 0°-60°    | 11843.6 | 86.2      |
| 0°-90°    | 13734.0 | 100.0     |
| 90°-120°  | 0.0     | 0.0       |
| 90°-150°  | 0.0     | 0.0       |
| 90°-180°  | 0.0     | 0.0       |
| 0°-180°   | 13734.0 | 100.0     |

**CANDELA DISTRIBUTION:**

|     | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|-----|------|-------|------|-------|------|------|
| 0°  | 6996 | 6996  | 6996 | 6996  | 6996 |      |
| 5°  | 6875 | 6866  | 6866 | 6858  | 6858 | 653  |
| 15° | 6430 | 6430  | 6365 | 6300  | 6276 | 1808 |
| 25° | 5572 | 5540  | 5451 | 5257  | 5112 | 2558 |
| 35° | 4521 | 4489  | 4270 | 3947  | 3850 | 2827 |
| 45° | 3470 | 3397  | 3106 | 2847  | 2734 | 2673 |
| 55° | 2410 | 2337  | 2119 | 1868  | 1771 | 2162 |
| 65° | 1432 | 1351  | 1221 | 1246  | 1035 | 1411 |
| 75° | 574  | 534   | 501  | 477   | 526  | 615  |
| 85° | 81   | 89    | 97   | 105   | 113  | 112  |
| 90° | 0    | 0     | 0    | 0     | 0    |      |



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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|-------|--------|--------|--------|--------|--------|
| 0°    | 6995.9 | 6995.9 | 6995.9 | 6995.9 | 6995.9 |
| 2.5°  | 6947.4 | 6947.4 | 6947.4 | 6939.3 | 6939.3 |
| 5°    | 6874.6 | 6866.5 | 6866.5 | 6858.4 | 6858.4 |
| 7.5°  | 6818.0 | 6809.9 | 6801.8 | 6793.7 | 6777.5 |
| 10°   | 6737.1 | 6737.1 | 6729.0 | 6688.6 | 6680.5 |
| 12.5° | 6607.7 | 6599.6 | 6567.3 | 6510.7 | 6494.5 |
| 15°   | 6429.8 | 6429.8 | 6365.1 | 6300.4 | 6276.1 |
| 17.5° | 6235.7 | 6227.6 | 6146.7 | 6082.0 | 6049.6 |
| 20°   | 6025.4 | 6009.2 | 5928.3 | 5823.2 | 5766.6 |
| 22.5° | 5790.8 | 5790.8 | 5693.8 | 5556.3 | 5499.7 |
| 25°   | 5572.5 | 5540.1 | 5451.2 | 5257.0 | 5111.5 |
| 27.5° | 5321.7 | 5273.2 | 5176.2 | 4901.2 | 4731.3 |
| 30°   | 5046.8 | 5022.5 | 4885.0 | 4529.1 | 4399.7 |
| 32.5° | 4788.0 | 4747.5 | 4601.9 | 4229.9 | 4124.8 |
| 35°   | 4521.1 | 4488.7 | 4270.3 | 3946.8 | 3849.8 |
| 37.5° | 4254.2 | 4213.7 | 3938.7 | 3679.9 | 3558.6 |
| 40°   | 3987.3 | 3938.7 | 3639.5 | 3404.9 | 3275.5 |
| 42.5° | 3736.5 | 3671.8 | 3380.7 | 3130.0 | 2984.4 |
| 45°   | 3469.7 | 3396.9 | 3105.7 | 2846.9 | 2733.7 |
| 47.5° | 3202.8 | 3138.1 | 2871.2 | 2604.3 | 2474.9 |
| 50°   | 2919.7 | 2863.1 | 2620.4 | 2353.5 | 2216.0 |
| 52.5° | 2685.1 | 2596.2 | 2361.6 | 2094.7 | 1981.5 |
| 55°   | 2410.2 | 2337.4 | 2119.0 | 1868.3 | 1771.2 |
| 57.5° | 2159.4 | 2086.6 | 1884.4 | 1649.9 | 1569.0 |
| 60°   | 1924.9 | 1819.7 | 1649.9 | 1447.7 | 1383.0 |
| 62.5° | 1666.1 | 1585.2 | 1439.6 | 1269.8 | 1350.7 |
| 65°   | 1431.5 | 1350.7 | 1221.3 | 1245.5 | 1035.2 |
| 67.5° | 1172.7 | 1132.3 | 1019.1 | 905.8  | 873.5  |
| 70°   | 954.4  | 905.8  | 865.4  | 744.1  | 711.7  |
| 72.5° | 760.2  | 711.7  | 655.1  | 590.4  | 566.1  |
| 75°   | 574.2  | 533.8  | 501.4  | 477.2  | 525.7  |
| 77.5° | 396.3  | 380.1  | 355.9  | 331.6  | 323.5  |
| 80°   | 258.8  | 250.7  | 242.6  | 234.5  | 226.5  |
| 82.5° | 153.7  | 153.7  | 153.7  | 153.7  | 153.7  |
| 85°   | 80.9   | 89.0   | 97.1   | 105.1  | 113.2  |
| 87.5° | 48.5   | 48.5   | 56.6   | 64.7   | 72.8   |
| 90°   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |

(END OF REPORT)