

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: P563614

Luminaire Tested: FSR-24-4-LD4-3STD-50-UNV-82-97-EDD-90

Issue Date: 7/20/2021

**Test Information**

Test Method: LM-79-2019  
Report Number: P563614  
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-82-97-EDD-90  
Description: 2X4 FSR TROFFER WITH .187 CLEAR PC FIXTURE SIDE AND .375 CLEAR TEMPERED GLASS ENVIRONMENTAL SIDE LENSES WITH, 90 CRI AND 5000K CCT LEDS  
Light Source: -  
Ballast/Driver: -

**Summary**

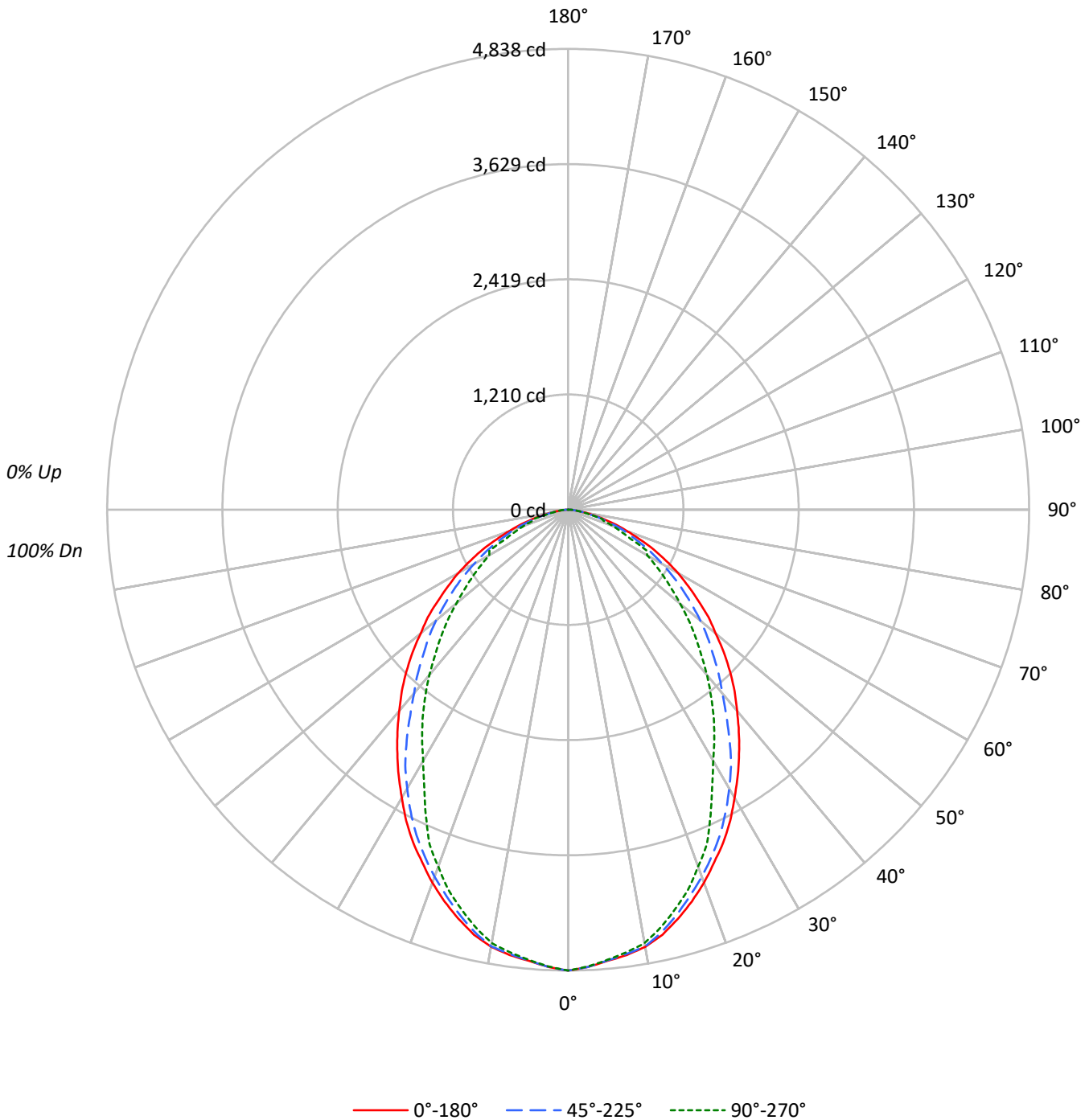
Lumens per Lamp: N/A  
Luminaire Lumens: 9498.0 lumens  
Efficiency: N/A  
Efficacy: 95.1 lumens/watt  
Spacing Criteria (0/90/45): 1.1 / 1 / 1.15  
Luminous Opening: Rectangular (W 2' x L: 4' x H: 0')  
CIE Type: Direct  
  
Input Watts (W): 99.9  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage 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°  | 6510 | 6510 | 6510 |
| 5°  | 6421 | 6414 | 6406 |
| 10° | 6366 | 6358 | 6312 |
| 15° | 6194 | 6132 | 6046 |
| 20° | 5966 | 5870 | 5710 |
| 25° | 5721 | 5597 | 5248 |
| 30° | 5423 | 5249 | 4727 |
| 35° | 5136 | 4851 | 4373 |
| 40° | 4843 | 4421 | 3979 |
| 45° | 4566 | 4087 | 3597 |
| 50° | 4227 | 3793 | 3208 |
| 55° | 3910 | 3438 | 2873 |
| 60° | 3582 | 3070 | 2574 |
| 65° | 3152 | 2689 | 2279 |
| 70° | 2596 | 2354 | 1936 |
| 75° | 2064 | 1803 | 1890 |
| 80° | 1387 | 1300 | 1213 |
| 85° | 863  | 1036 | 1209 |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 4566 cd/sqm



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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 450.4  | 4.7       |
| 10°-20°   | 1236.0 | 13.0      |
| 20°-30°   | 1711.2 | 18.0      |
| 30°-40°   | 1824.6 | 19.2      |
| 40°-50°   | 1664.6 | 17.5      |
| 50°-60°   | 1304.0 | 13.7      |
| 60°-70°   | 849.9  | 8.9       |
| 70°-80°   | 376.6  | 4.0       |
| 80°-90°   | 80.9   | 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°    | 3397.5 | 35.8      |
| 0°-40°    | 5222.1 | 55.0      |
| 0°-60°    | 8190.7 | 86.2      |
| 0°-90°    | 9498.0 | 100.0     |
| 90°-120°  | 0.0    | 0.0       |
| 90°-150°  | 0.0    | 0.0       |
| 90°-180°  | 0.0    | 0.0       |
| 0°-180°   | 9498.0 | 100.0     |

**CANDELA DISTRIBUTION:**

|     | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|-----|------|-------|------|-------|------|------|
| 0°  | 4838 | 4838  | 4838 | 4838  | 4838 |      |
| 5°  | 4754 | 4749  | 4749 | 4743  | 4743 | 451  |
| 15° | 4447 | 4447  | 4402 | 4357  | 4340 | 1250 |
| 25° | 3854 | 3831  | 3770 | 3636  | 3535 | 1769 |
| 35° | 3127 | 3104  | 2953 | 2730  | 2662 | 1955 |
| 45° | 2400 | 2349  | 2148 | 1969  | 1890 | 1848 |
| 55° | 1667 | 1616  | 1465 | 1292  | 1225 | 1495 |
| 65° | 990  | 934   | 845  | 861   | 716  | 976  |
| 75° | 397  | 369   | 347  | 330   | 364  | 426  |
| 85° | 56   | 62    | 67   | 73    | 78   | 78   |
| 90° | 0    | 0     | 0    | 0     | 0    |      |



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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|-------|--------|--------|--------|--------|--------|
| 0°    | 4838.2 | 4838.2 | 4838.2 | 4838.2 | 4838.2 |
| 2.5°  | 4804.6 | 4804.6 | 4804.6 | 4799.0 | 4799.0 |
| 5°    | 4754.3 | 4748.7 | 4748.7 | 4743.1 | 4743.1 |
| 7.5°  | 4715.1 | 4709.5 | 4703.9 | 4698.3 | 4687.1 |
| 10°   | 4659.2 | 4659.2 | 4653.6 | 4625.6 | 4620.0 |
| 12.5° | 4569.7 | 4564.1 | 4541.7 | 4502.6 | 4491.4 |
| 15°   | 4446.6 | 4446.6 | 4401.9 | 4357.1 | 4340.4 |
| 17.5° | 4312.4 | 4306.8 | 4250.9 | 4206.1 | 4183.7 |
| 20°   | 4167.0 | 4155.8 | 4099.8 | 4027.1 | 3988.0 |
| 22.5° | 4004.8 | 4004.8 | 3937.6 | 3842.6 | 3803.4 |
| 25°   | 3853.7 | 3831.4 | 3769.8 | 3635.6 | 3534.9 |
| 27.5° | 3680.4 | 3646.8 | 3579.7 | 3389.5 | 3272.0 |
| 30°   | 3490.2 | 3473.4 | 3378.3 | 3132.2 | 3042.7 |
| 32.5° | 3311.2 | 3283.2 | 3182.6 | 2925.3 | 2852.6 |
| 35°   | 3126.6 | 3104.2 | 2953.2 | 2729.5 | 2662.4 |
| 37.5° | 2942.0 | 2914.1 | 2723.9 | 2544.9 | 2461.0 |
| 40°   | 2757.5 | 2723.9 | 2517.0 | 2354.8 | 2265.3 |
| 42.5° | 2584.1 | 2539.3 | 2338.0 | 2164.6 | 2063.9 |
| 45°   | 2399.5 | 2349.2 | 2147.8 | 1968.8 | 1890.5 |
| 47.5° | 2214.9 | 2170.2 | 1985.6 | 1801.0 | 1711.5 |
| 50°   | 2019.2 | 1980.0 | 1812.2 | 1627.6 | 1532.5 |
| 52.5° | 1857.0 | 1795.4 | 1633.2 | 1448.6 | 1370.3 |
| 55°   | 1666.8 | 1616.4 | 1465.4 | 1292.0 | 1224.9 |
| 57.5° | 1493.4 | 1443.1 | 1303.2 | 1141.0 | 1085.1 |
| 60°   | 1331.2 | 1258.5 | 1141.0 | 1001.2 | 956.4  |
| 62.5° | 1152.2 | 1096.3 | 995.6  | 878.1  | 934.1  |
| 65°   | 990.0  | 934.1  | 844.6  | 861.4  | 715.9  |
| 67.5° | 811.0  | 783.1  | 704.7  | 626.4  | 604.1  |
| 70°   | 660.0  | 626.4  | 598.5  | 514.6  | 492.2  |
| 72.5° | 525.8  | 492.2  | 453.1  | 408.3  | 391.5  |
| 75°   | 397.1  | 369.2  | 346.8  | 330.0  | 363.6  |
| 77.5° | 274.1  | 262.9  | 246.1  | 229.3  | 223.7  |
| 80°   | 179.0  | 173.4  | 167.8  | 162.2  | 156.6  |
| 82.5° | 106.3  | 106.3  | 106.3  | 106.3  | 106.3  |
| 85°   | 55.9   | 61.5   | 67.1   | 72.7   | 78.3   |
| 87.5° | 33.6   | 33.6   | 39.2   | 44.7   | 50.3   |
| 90°   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |

(END OF REPORT)