

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: P564068

Luminaire Tested: FSR-24-4-LD4-4STD-35-UNV-93-86-EDD-90

Issue Date: 7/20/2021

**Test Information**

Test Method: LM-79-2019  
Report Number: P564068  
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-LD4-4STD-35-UNV-93-86-EDD-90  
Description: 2X4 FSR TROFFER WITH .156 CLEAR TEMPERED GLASS FIXTURE SIDE AND .250 CLEAR PC ENVIRONMENTAL SIDE LENSES WITH, 90 CRI AND 3500K CCT LEDS  
Light Source: -  
Ballast/Driver: -

**Summary**

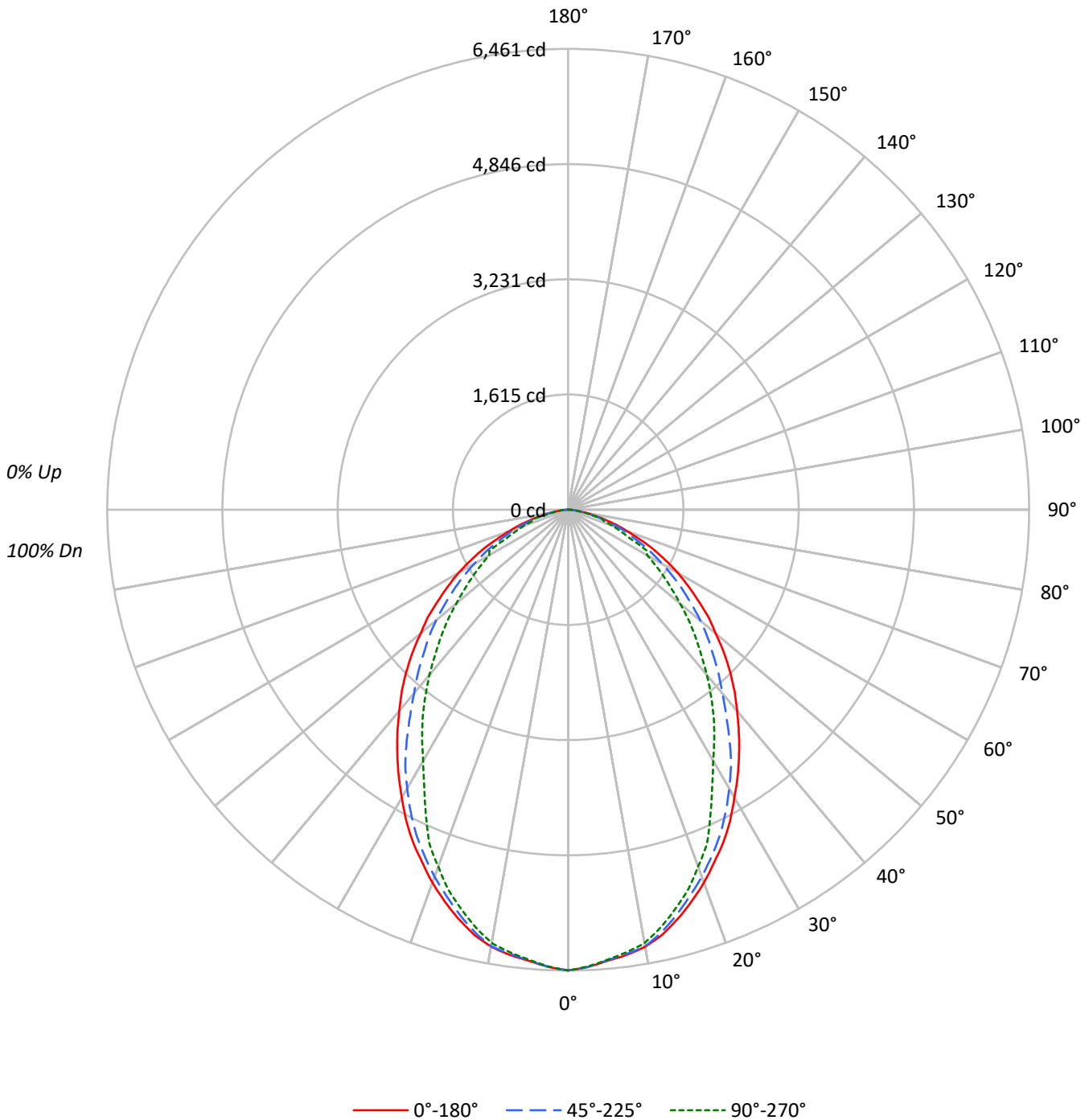
Lumens per Lamp: N/A  
Luminaire Lumens: 12683.0 lumens  
Efficiency: N/A  
Efficacy: 95.2 lumens/watt  
Spacing Criteria (0/90/45): 1.1 / 1 / 1.15  
Luminous Opening: Rectangular (W 2' x L: 4' x H: 0')  
CIE Type: Direct  
  
Input Watts (W): 133.2  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage 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





TEST NUMBER: P564068

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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°  | 8693 | 8693 | 8693 |
| 5°  | 8574 | 8564 | 8554 |
| 10° | 8500 | 8490 | 8429 |
| 15° | 8271 | 8188 | 8073 |
| 20° | 7967 | 7839 | 7625 |
| 25° | 7640 | 7473 | 7008 |
| 30° | 7241 | 7009 | 6313 |
| 35° | 6858 | 6478 | 5840 |
| 40° | 6467 | 5903 | 5313 |
| 45° | 6097 | 5457 | 4804 |
| 50° | 5644 | 5065 | 4284 |
| 55° | 5221 | 4590 | 3837 |
| 60° | 4783 | 4100 | 3437 |
| 65° | 4209 | 3591 | 3044 |
| 70° | 3467 | 3144 | 2586 |
| 75° | 2757 | 2407 | 2524 |
| 80° | 1852 | 1736 | 1620 |
| 85° | 1153 | 1383 | 1615 |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 6097 cd/sqm



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**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 601.4   | 4.7       |
| 10°-20°   | 1650.5  | 13.0      |
| 20°-30°   | 2285.0  | 18.0      |
| 30°-40°   | 2436.4  | 19.2      |
| 40°-50°   | 2222.7  | 17.5      |
| 50°-60°   | 1741.3  | 13.7      |
| 60°-70°   | 1134.9  | 8.9       |
| 70°-80°   | 502.8   | 4.0       |
| 80°-90°   | 108.0   | 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°    | 4536.8  | 35.8      |
| 0°-40°    | 6973.3  | 55.0      |
| 0°-60°    | 10937.3 | 86.2      |
| 0°-90°    | 12683.0 | 100.0     |
| 90°-120°  | 0.0     | 0.0       |
| 90°-150°  | 0.0     | 0.0       |
| 90°-180°  | 0.0     | 0.0       |
| 0°-180°   | 12683.0 | 100.0     |

**CANDELA DISTRIBUTION:**

|     | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|-----|------|-------|------|-------|------|------|
| 0°  | 6461 | 6461  | 6461 | 6461  | 6461 |      |
| 5°  | 6348 | 6341  | 6341 | 6334  | 6334 | 603  |
| 15° | 5938 | 5938  | 5878 | 5818  | 5796 | 1669 |
| 25° | 5146 | 5116  | 5034 | 4855  | 4720 | 2363 |
| 35° | 4175 | 4145  | 3944 | 3645  | 3555 | 2610 |
| 45° | 3204 | 3137  | 2868 | 2629  | 2524 | 2468 |
| 55° | 2226 | 2158  | 1957 | 1725  | 1636 | 1996 |
| 65° | 1322 | 1247  | 1128 | 1150  | 956  | 1303 |
| 75° | 530  | 493   | 463  | 441   | 486  | 568  |
| 85° | 75   | 82    | 90   | 97    | 105  | 104  |
| 90° | 0    | 0     | 0    | 0     | 0    |      |



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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|-------|--------|--------|--------|--------|--------|
| 0°    | 6460.6 | 6460.6 | 6460.6 | 6460.6 | 6460.6 |
| 2.5°  | 6415.7 | 6415.7 | 6415.7 | 6408.3 | 6408.3 |
| 5°    | 6348.5 | 6341.0 | 6341.0 | 6333.6 | 6333.6 |
| 7.5°  | 6296.2 | 6288.8 | 6281.3 | 6273.8 | 6258.9 |
| 10°   | 6221.5 | 6221.5 | 6214.1 | 6176.7 | 6169.3 |
| 12.5° | 6102.0 | 6094.6 | 6064.7 | 6012.4 | 5997.5 |
| 15°   | 5937.7 | 5937.7 | 5878.0 | 5818.2 | 5795.8 |
| 17.5° | 5758.5 | 5751.0 | 5676.3 | 5616.6 | 5586.7 |
| 20°   | 5564.3 | 5549.4 | 5474.7 | 5377.6 | 5325.3 |
| 22.5° | 5347.7 | 5347.7 | 5258.1 | 5131.1 | 5078.8 |
| 25°   | 5146.0 | 5116.2 | 5034.0 | 4854.7 | 4720.3 |
| 27.5° | 4914.5 | 4869.7 | 4780.1 | 4526.1 | 4369.3 |
| 30°   | 4660.6 | 4638.2 | 4511.2 | 4182.6 | 4063.1 |
| 32.5° | 4421.6 | 4384.2 | 4249.8 | 3906.2 | 3809.1 |
| 35°   | 4175.1 | 4145.2 | 3943.6 | 3644.8 | 3555.2 |
| 37.5° | 3928.6 | 3891.3 | 3637.3 | 3398.3 | 3286.3 |
| 40°   | 3682.1 | 3637.3 | 3361.0 | 3144.4 | 3024.9 |
| 42.5° | 3450.6 | 3390.9 | 3122.0 | 2890.4 | 2756.0 |
| 45°   | 3204.1 | 3136.9 | 2868.0 | 2629.0 | 2524.5 |
| 47.5° | 2957.7 | 2897.9 | 2651.4 | 2405.0 | 2285.5 |
| 50°   | 2696.3 | 2644.0 | 2419.9 | 2173.4 | 2046.5 |
| 52.5° | 2479.7 | 2397.5 | 2180.9 | 1934.4 | 1829.9 |
| 55°   | 2225.7 | 2158.5 | 1956.8 | 1725.3 | 1635.7 |
| 57.5° | 1994.2 | 1927.0 | 1740.2 | 1523.6 | 1449.0 |
| 60°   | 1777.6 | 1680.5 | 1523.6 | 1336.9 | 1277.2 |
| 62.5° | 1538.6 | 1463.9 | 1329.5 | 1172.6 | 1247.3 |
| 65°   | 1322.0 | 1247.3 | 1127.8 | 1150.2 | 956.0  |
| 67.5° | 1083.0 | 1045.6 | 941.1  | 836.5  | 806.6  |
| 70°   | 881.3  | 836.5  | 799.2  | 687.1  | 657.3  |
| 72.5° | 702.1  | 657.3  | 605.0  | 545.2  | 522.8  |
| 75°   | 530.3  | 492.9  | 463.1  | 440.7  | 485.5  |
| 77.5° | 366.0  | 351.0  | 328.6  | 306.2  | 298.8  |
| 80°   | 239.0  | 231.5  | 224.1  | 216.6  | 209.1  |
| 82.5° | 141.9  | 141.9  | 141.9  | 141.9  | 141.9  |
| 85°   | 74.7   | 82.2   | 89.6   | 97.1   | 104.6  |
| 87.5° | 44.8   | 44.8   | 52.3   | 59.8   | 67.2   |
| 90°   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |

(END OF REPORT)