

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: P562639

Luminaire Tested: FSR-24-4-LD4-2HI-50-UNV-81-97-EDD

Issue Date: 7/20/2021

**Test Information**

Test Method: LM-79-2019  
Report Number: P562639  
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-LD4-2HI-50-UNV-81-97-EDD  
Description: 2X4 FSR TROFFER WITH .156 CLEAR PC FIXTURE SIDE AND .375 CLEAR TEMPERED GLASS ENVIRONMENTAL SIDE LENSES WITH, 80 CRI AND 5000K CCT LEDS  
Light Source: -  
Ballast/Driver: -

**Summary**

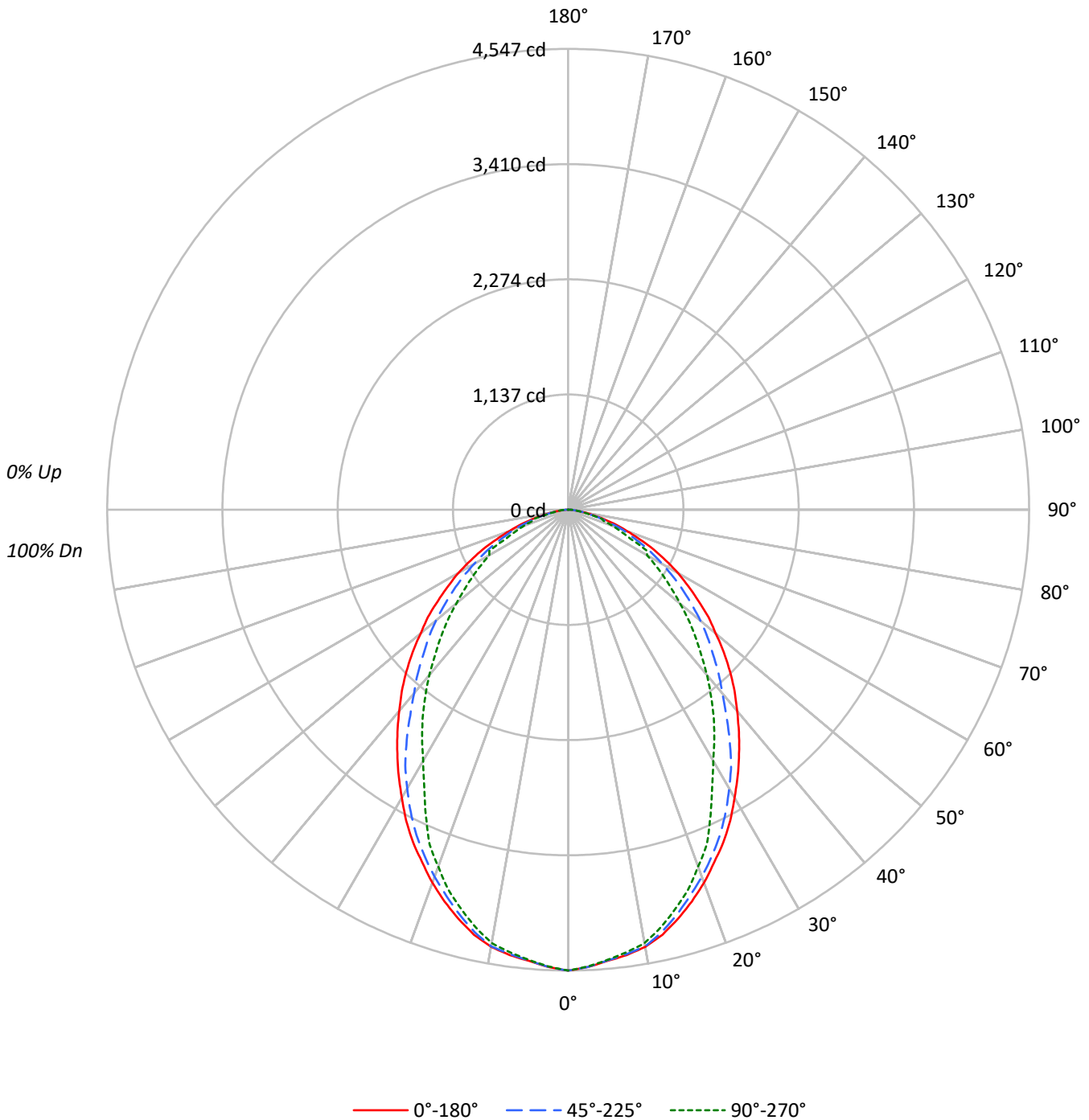
Lumens per Lamp: N/A  
Luminaire Lumens: 8927.0 lumens  
Efficiency: N/A  
Efficacy: 103.3 lumens/watt  
Spacing Criteria (0/90/45): 1.1 / 1 / 1.15  
Luminous Opening: Rectangular (W 2' x L: 4' x H: 0')  
CIE Type: Direct  
  
Input Watts (W): 86.4  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage 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  | 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°  | 6118 | 6118 | 6118 |
| 5°  | 6035 | 6028 | 6021 |
| 10° | 5983 | 5976 | 5933 |
| 15° | 5822 | 5763 | 5682 |
| 20° | 5608 | 5517 | 5367 |
| 25° | 5377 | 5260 | 4932 |
| 30° | 5097 | 4933 | 4443 |
| 35° | 4827 | 4559 | 4110 |
| 40° | 4552 | 4155 | 3740 |
| 45° | 4291 | 3841 | 3381 |
| 50° | 3972 | 3565 | 3015 |
| 55° | 3675 | 3231 | 2701 |
| 60° | 3367 | 2886 | 2419 |
| 65° | 2962 | 2527 | 2142 |
| 70° | 2440 | 2213 | 1820 |
| 75° | 1940 | 1694 | 1776 |
| 80° | 1303 | 1222 | 1141 |
| 85° | 812  | 974  | 1136 |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 4291 cd/sqm



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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 423.3  | 4.7       |
| 10°-20°   | 1161.7 | 13.0      |
| 20°-30°   | 1608.3 | 18.0      |
| 30°-40°   | 1714.9 | 19.2      |
| 40°-50°   | 1564.5 | 17.5      |
| 50°-60°   | 1225.7 | 13.7      |
| 60°-70°   | 798.8  | 8.9       |
| 70°-80°   | 353.9  | 4.0       |
| 80°-90°   | 76.0   | 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°    | 3193.3 | 35.8      |
| 0°-40°    | 4908.2 | 55.0      |
| 0°-60°    | 7698.3 | 86.2      |
| 0°-90°    | 8927.0 | 100.0     |
| 90°-120°  | 0.0    | 0.0       |
| 90°-150°  | 0.0    | 0.0       |
| 90°-180°  | 0.0    | 0.0       |
| 0°-180°   | 8927.0 | 100.0     |

**CANDELA DISTRIBUTION:**

|     | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|-----|------|-------|------|-------|------|------|
| 0°  | 4547 | 4547  | 4547 | 4547  | 4547 |      |
| 5°  | 4468 | 4463  | 4463 | 4458  | 4458 | 424  |
| 15° | 4179 | 4179  | 4137 | 4095  | 4079 | 1175 |
| 25° | 3622 | 3601  | 3543 | 3417  | 3322 | 1663 |
| 35° | 2939 | 2918  | 2776 | 2565  | 2502 | 1837 |
| 45° | 2255 | 2208  | 2019 | 1850  | 1777 | 1737 |
| 55° | 1567 | 1519  | 1377 | 1214  | 1151 | 1405 |
| 65° | 930  | 878   | 794  | 810   | 673  | 917  |
| 75° | 373  | 347   | 326  | 310   | 342  | 400  |
| 85° | 53   | 58    | 63   | 68    | 74   | 73   |
| 90° | 0    | 0     | 0    | 0     | 0    |      |



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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|-------|--------|--------|--------|--------|--------|
| 0°    | 4547.3 | 4547.3 | 4547.3 | 4547.3 | 4547.3 |
| 2.5°  | 4515.8 | 4515.8 | 4515.8 | 4510.5 | 4510.5 |
| 5°    | 4468.4 | 4463.2 | 4463.2 | 4457.9 | 4457.9 |
| 7.5°  | 4431.6 | 4426.4 | 4421.1 | 4415.9 | 4405.4 |
| 10°   | 4379.1 | 4379.1 | 4373.8 | 4347.5 | 4342.3 |
| 12.5° | 4295.0 | 4289.7 | 4268.7 | 4231.9 | 4221.4 |
| 15°   | 4179.3 | 4179.3 | 4137.2 | 4095.2 | 4079.4 |
| 17.5° | 4053.1 | 4047.9 | 3995.3 | 3953.3 | 3932.2 |
| 20°   | 3916.5 | 3905.9 | 3853.4 | 3785.0 | 3748.2 |
| 22.5° | 3764.0 | 3764.0 | 3700.9 | 3611.6 | 3574.8 |
| 25°   | 3622.1 | 3601.0 | 3543.2 | 3417.0 | 3322.4 |
| 27.5° | 3459.1 | 3427.6 | 3364.5 | 3185.7 | 3075.3 |
| 30°   | 3280.4 | 3264.6 | 3175.2 | 2943.9 | 2859.8 |
| 32.5° | 3112.1 | 3085.9 | 2991.2 | 2749.4 | 2681.1 |
| 35°   | 2938.7 | 2917.6 | 2775.7 | 2565.4 | 2502.3 |
| 37.5° | 2765.2 | 2738.9 | 2560.2 | 2391.9 | 2313.1 |
| 40°   | 2591.7 | 2560.2 | 2365.6 | 2213.2 | 2129.1 |
| 42.5° | 2428.7 | 2386.7 | 2197.4 | 2034.5 | 1939.8 |
| 45°   | 2255.2 | 2207.9 | 2018.7 | 1850.5 | 1776.9 |
| 47.5° | 2081.8 | 2039.7 | 1866.2 | 1692.8 | 1608.6 |
| 50°   | 1897.8 | 1861.0 | 1703.3 | 1529.8 | 1440.4 |
| 52.5° | 1745.3 | 1687.5 | 1535.0 | 1361.6 | 1288.0 |
| 55°   | 1566.6 | 1519.3 | 1377.3 | 1214.4 | 1151.3 |
| 57.5° | 1403.6 | 1356.3 | 1224.9 | 1072.4 | 1019.9 |
| 60°   | 1251.2 | 1182.8 | 1072.4 | 941.0  | 898.9  |
| 62.5° | 1082.9 | 1030.4 | 935.7  | 825.3  | 877.9  |
| 65°   | 930.5  | 877.9  | 793.8  | 809.6  | 672.9  |
| 67.5° | 762.3  | 736.0  | 662.4  | 588.8  | 567.8  |
| 70°   | 620.3  | 588.8  | 562.5  | 483.6  | 462.6  |
| 72.5° | 494.2  | 462.6  | 425.8  | 383.8  | 368.0  |
| 75°   | 373.2  | 347.0  | 325.9  | 310.2  | 341.7  |
| 77.5° | 257.6  | 247.1  | 231.3  | 215.5  | 210.3  |
| 80°   | 168.2  | 163.0  | 157.7  | 152.5  | 147.2  |
| 82.5° | 99.9   | 99.9   | 99.9   | 99.9   | 99.9   |
| 85°   | 52.6   | 57.8   | 63.1   | 68.3   | 73.6   |
| 87.5° | 31.5   | 31.5   | 36.8   | 42.1   | 47.3   |
| 90°   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |

(END OF REPORT)