

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: P564121

Luminaire Tested: FSR-24-4-LD4-4STD-40-UNV-82-88-EDD

Issue Date: 7/20/2021

**Test Information**

Test Method: LM-79-2019  
Report Number: P564121  
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-40-UNV-82-88-EDD  
Description: 2X4 FSR TROFFER WITH .187 CLEAR PC FIXTURE SIDE AND .500 CLEAR PC ENVIRONMENTAL SI  
LENSES WITH, 80 CRI AND 4000K CCT LEDS  
Light Source: -  
Ballast/Driver: -

**Summary**

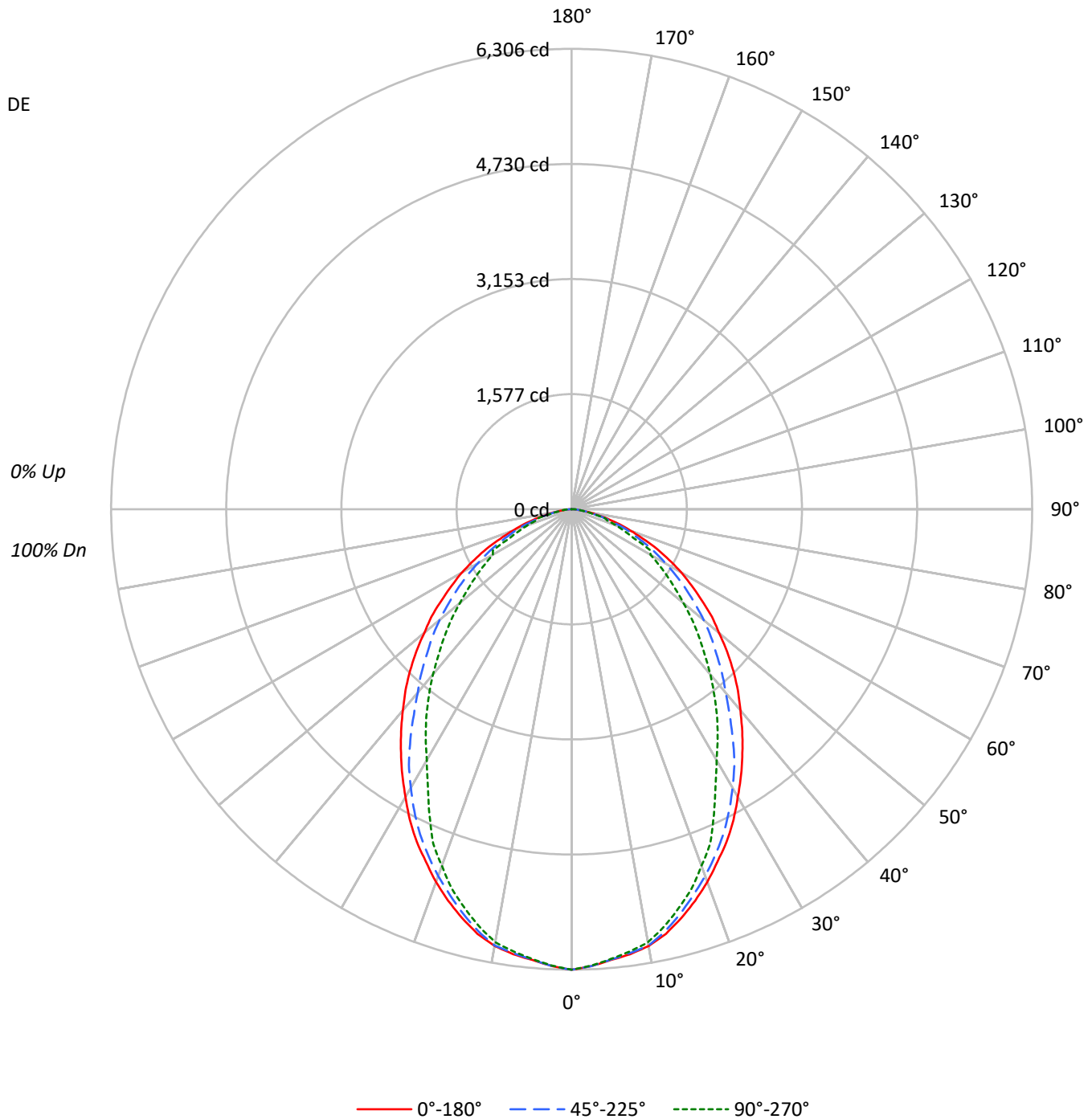
Lumens per Lamp: N/A  
Luminaire Lumens: 12380.0 lumens  
Efficiency: N/A  
Efficacy: 92.9 lumens/watt  
Spacing Criteria (0/90/45): 1.1 / 1 / 1.15  
Luminous Opening: Rectangular (W 2' x L: 4' x H: 0')  
CIE Type: Direct  
  
Input Watts (W): 133.2  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage 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





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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 | 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°  | 8485 | 8485 | 8485 |
| 5°  | 8370 | 8360 | 8350 |
| 10° | 8297 | 8287 | 8227 |
| 15° | 8073 | 7992 | 7880 |
| 20° | 7777 | 7652 | 7443 |
| 25° | 7457 | 7295 | 6840 |
| 30° | 7068 | 6841 | 6162 |
| 35° | 6694 | 6323 | 5700 |
| 40° | 6313 | 5762 | 5186 |
| 45° | 5951 | 5327 | 4689 |
| 50° | 5509 | 4944 | 4181 |
| 55° | 5096 | 4481 | 3745 |
| 60° | 4669 | 4002 | 3355 |
| 65° | 4108 | 3505 | 2971 |
| 70° | 3384 | 3069 | 2524 |
| 75° | 2691 | 2350 | 2464 |
| 80° | 1808 | 1695 | 1581 |
| 85° | 1125 | 1351 | 1576 |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 5951 cd/sqm



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**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 587.0   | 4.7       |
| 10°-20°   | 1611.0  | 13.0      |
| 20°-30°   | 2230.4  | 18.0      |
| 30°-40°   | 2378.2  | 19.2      |
| 40°-50°   | 2169.6  | 17.5      |
| 50°-60°   | 1699.7  | 13.7      |
| 60°-70°   | 1107.8  | 8.9       |
| 70°-80°   | 490.8   | 4.0       |
| 80°-90°   | 105.4   | 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°    | 4428.4  | 35.8      |
| 0°-40°    | 6806.6  | 55.0      |
| 0°-60°    | 10676.0 | 86.2      |
| 0°-90°    | 12380.0 | 100.0     |
| 90°-120°  | 0.0     | 0.0       |
| 90°-150°  | 0.0     | 0.0       |
| 90°-180°  | 0.0     | 0.0       |
| 0°-180°   | 12380.0 | 100.0     |

**CANDELA DISTRIBUTION:**

|     | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|-----|------|-------|------|-------|------|------|
| 0°  | 6306 | 6306  | 6306 | 6306  | 6306 |      |
| 5°  | 6197 | 6190  | 6190 | 6182  | 6182 | 588  |
| 15° | 5796 | 5796  | 5738 | 5679  | 5657 | 1629 |
| 25° | 5023 | 4994  | 4914 | 4739  | 4608 | 2306 |
| 35° | 4075 | 4046  | 3849 | 3558  | 3470 | 2548 |
| 45° | 3128 | 3062  | 2800 | 2566  | 2464 | 2409 |
| 55° | 2172 | 2107  | 1910 | 1684  | 1597 | 1949 |
| 65° | 1290 | 1218  | 1101 | 1123  | 933  | 1272 |
| 75° | 518  | 481   | 452  | 430   | 474  | 555  |
| 85° | 73   | 80    | 88   | 95    | 102  | 101  |
| 90° | 0    | 0     | 0    | 0     | 0    |      |



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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|-------|--------|--------|--------|--------|--------|
| 0°    | 6306.2 | 6306.2 | 6306.2 | 6306.2 | 6306.2 |
| 2.5°  | 6262.5 | 6262.5 | 6262.5 | 6255.2 | 6255.2 |
| 5°    | 6196.9 | 6189.6 | 6189.6 | 6182.3 | 6182.3 |
| 7.5°  | 6145.8 | 6138.5 | 6131.2 | 6123.9 | 6109.4 |
| 10°   | 6072.9 | 6072.9 | 6065.6 | 6029.2 | 6021.9 |
| 12.5° | 5956.3 | 5949.0 | 5919.8 | 5868.8 | 5854.2 |
| 15°   | 5795.9 | 5795.9 | 5737.6 | 5679.2 | 5657.4 |
| 17.5° | 5620.9 | 5613.6 | 5540.7 | 5482.4 | 5453.2 |
| 20°   | 5431.4 | 5416.8 | 5343.9 | 5249.1 | 5198.1 |
| 22.5° | 5219.9 | 5219.9 | 5132.5 | 5008.5 | 4957.5 |
| 25°   | 5023.1 | 4993.9 | 4913.7 | 4738.8 | 4607.5 |
| 27.5° | 4797.1 | 4753.3 | 4665.9 | 4418.0 | 4264.9 |
| 30°   | 4549.2 | 4527.3 | 4403.4 | 4082.6 | 3966.0 |
| 32.5° | 4315.9 | 4279.5 | 4148.2 | 3812.9 | 3718.1 |
| 35°   | 4075.3 | 4046.2 | 3849.3 | 3557.7 | 3470.2 |
| 37.5° | 3834.8 | 3798.3 | 3550.4 | 3317.1 | 3207.8 |
| 40°   | 3594.2 | 3550.4 | 3280.7 | 3069.3 | 2952.6 |
| 42.5° | 3368.2 | 3309.8 | 3047.4 | 2821.4 | 2690.2 |
| 45°   | 3127.6 | 3062.0 | 2799.5 | 2566.2 | 2464.2 |
| 47.5° | 2887.0 | 2828.7 | 2588.1 | 2347.5 | 2230.9 |
| 50°   | 2631.8 | 2580.8 | 2362.1 | 2121.5 | 1997.6 |
| 52.5° | 2420.4 | 2340.2 | 2128.8 | 1888.2 | 1786.2 |
| 55°   | 2172.5 | 2106.9 | 1910.1 | 1684.1 | 1596.6 |
| 57.5° | 1946.5 | 1880.9 | 1698.7 | 1487.2 | 1414.3 |
| 60°   | 1735.1 | 1640.3 | 1487.2 | 1305.0 | 1246.7 |
| 62.5° | 1501.8 | 1428.9 | 1297.7 | 1144.6 | 1217.5 |
| 65°   | 1290.4 | 1217.5 | 1100.9 | 1122.7 | 933.2  |
| 67.5° | 1057.1 | 1020.7 | 918.6  | 816.5  | 787.4  |
| 70°   | 860.3  | 816.5  | 780.1  | 670.7  | 641.6  |
| 72.5° | 685.3  | 641.6  | 590.5  | 532.2  | 510.3  |
| 75°   | 517.6  | 481.2  | 452.0  | 430.1  | 473.9  |
| 77.5° | 357.2  | 342.6  | 320.8  | 298.9  | 291.6  |
| 80°   | 233.3  | 226.0  | 218.7  | 211.4  | 204.1  |
| 82.5° | 138.5  | 138.5  | 138.5  | 138.5  | 138.5  |
| 85°   | 72.9   | 80.2   | 87.5   | 94.8   | 102.1  |
| 87.5° | 43.7   | 43.7   | 51.0   | 58.3   | 65.6   |
| 90°   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |

(END OF REPORT)