

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: P564169

Luminaire Tested: FSR-24-4-LD4-4STD-50-UNV-81-88-EDD

Issue Date: 7/20/2021

**Test Information**

Test Method: LM-79-2019  
Report Number: P564169  
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-50-UNV-81-88-EDD  
Description: 2X4 FSR TROFFER WITH .156 CLEAR PC FIXTURE SIDE AND .500 CLEAR PC ENVIRONMENTAL SI  
LENSES WITH, 80 CRI AND 5000K CCT LEDS  
Light Source: -  
Ballast/Driver: -

**Summary**

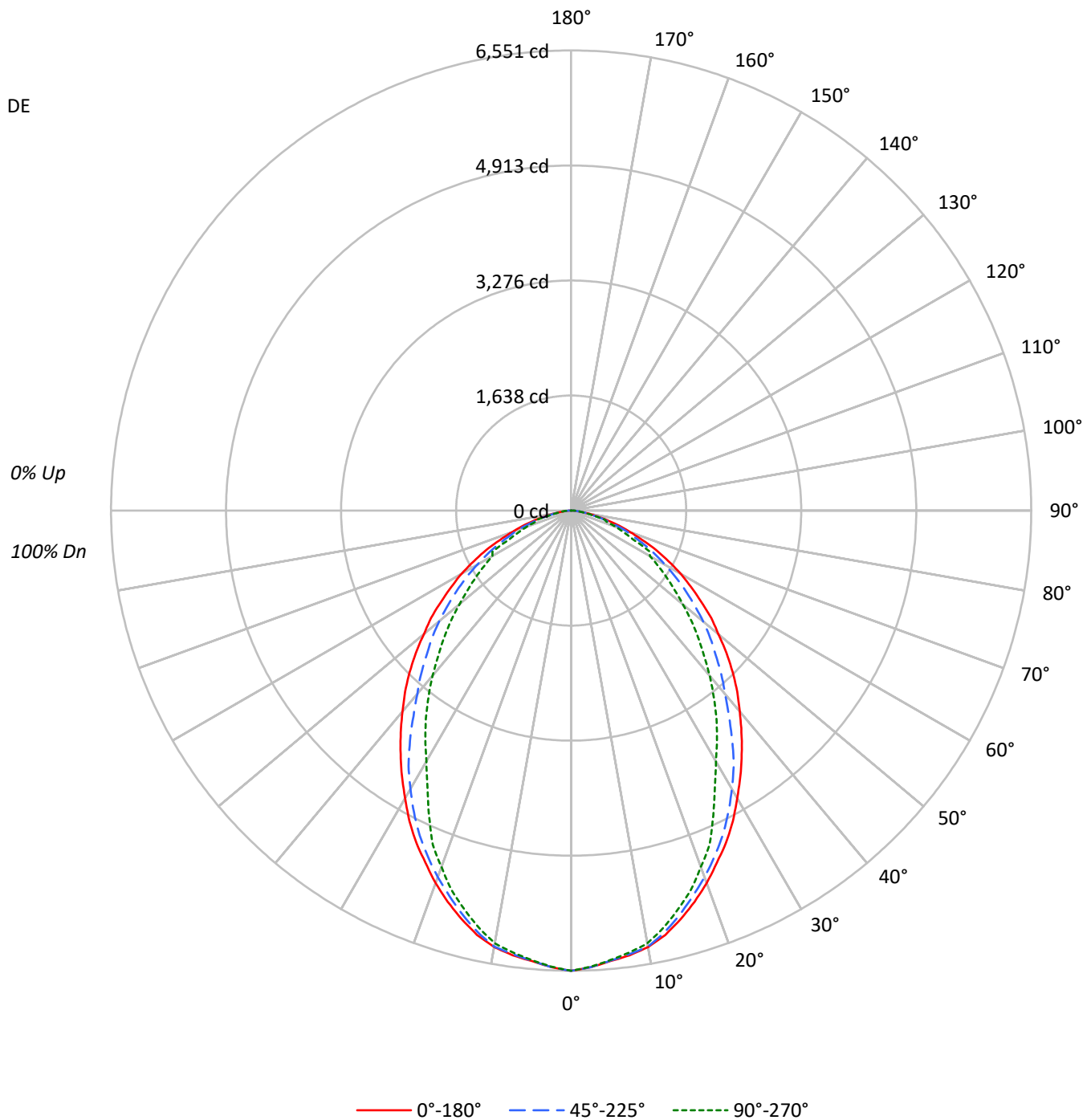
Lumens per Lamp: N/A  
Luminaire Lumens: 12861.0 lumens  
Efficiency: N/A  
Efficacy: 96.6 lumens/watt  
Spacing Criteria (0/90/45): 1.1 / 1 / 1.15  
Luminous Opening: Rectangular (W 2' x L: 4' x H: 0')  
CIE Type: Direct  
  
Input Watts (W): 133.2  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage 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°  | 8815 | 8815 | 8815 |
| 5°  | 8695 | 8685 | 8674 |
| 10° | 8620 | 8609 | 8547 |
| 15° | 8387 | 8303 | 8187 |
| 20° | 8079 | 7949 | 7732 |
| 25° | 7747 | 7578 | 7106 |
| 30° | 7342 | 7107 | 6401 |
| 35° | 6954 | 6568 | 5922 |
| 40° | 6558 | 5986 | 5387 |
| 45° | 6182 | 5534 | 4871 |
| 50° | 5723 | 5137 | 4344 |
| 55° | 5294 | 4655 | 3891 |
| 60° | 4850 | 4158 | 3485 |
| 65° | 4268 | 3641 | 3086 |
| 70° | 3516 | 3188 | 2622 |
| 75° | 2795 | 2441 | 2559 |
| 80° | 1878 | 1760 | 1643 |
| 85° | 1169 | 1403 | 1636 |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 6182 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 609.8   | 4.7       |
| 10°-20°   | 1673.6  | 13.0      |
| 20°-30°   | 2317.0  | 18.0      |
| 30°-40°   | 2470.6  | 19.2      |
| 40°-50°   | 2253.9  | 17.5      |
| 50°-60°   | 1765.8  | 13.7      |
| 60°-70°   | 1150.8  | 8.9       |
| 70°-80°   | 509.9   | 4.0       |
| 80°-90°   | 109.5   | 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°    | 4600.5  | 35.8      |
| 0°-40°    | 7071.1  | 55.0      |
| 0°-60°    | 11090.8 | 86.2      |
| 0°-90°    | 12861.0 | 100.0     |
| 90°-120°  | 0.0     | 0.0       |
| 90°-150°  | 0.0     | 0.0       |
| 90°-180°  | 0.0     | 0.0       |
| 0°-180°   | 12861.0 | 100.0     |

**CANDELA DISTRIBUTION:**

|     | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|-----|------|-------|------|-------|------|------|
| 0°  | 6551 | 6551  | 6551 | 6551  | 6551 |      |
| 5°  | 6438 | 6430  | 6430 | 6422  | 6422 | 611  |
| 15° | 6021 | 6021  | 5960 | 5900  | 5877 | 1693 |
| 25° | 5218 | 5188  | 5105 | 4923  | 4787 | 2396 |
| 35° | 4234 | 4203  | 3999 | 3696  | 3605 | 2647 |
| 45° | 3249 | 3181  | 2908 | 2666  | 2560 | 2503 |
| 55° | 2257 | 2189  | 1984 | 1750  | 1659 | 2024 |
| 65° | 1340 | 1265  | 1144 | 1166  | 969  | 1321 |
| 75° | 538  | 500   | 470  | 447   | 492  | 576  |
| 85° | 76   | 83    | 91   | 98    | 106  | 105  |
| 90° | 0    | 0     | 0    | 0     | 0    |      |

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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|-------|--------|--------|--------|--------|--------|
| 0°    | 6551.2 | 6551.2 | 6551.2 | 6551.2 | 6551.2 |
| 2.5°  | 6505.8 | 6505.8 | 6505.8 | 6498.2 | 6498.2 |
| 5°    | 6437.6 | 6430.0 | 6430.0 | 6422.5 | 6422.5 |
| 7.5°  | 6384.6 | 6377.0 | 6369.5 | 6361.9 | 6346.7 |
| 10°   | 6308.9 | 6308.9 | 6301.3 | 6263.4 | 6255.8 |
| 12.5° | 6187.7 | 6180.1 | 6149.8 | 6096.8 | 6081.7 |
| 15°   | 6021.1 | 6021.1 | 5960.5 | 5899.9 | 5877.2 |
| 17.5° | 5839.3 | 5831.7 | 5756.0 | 5695.4 | 5665.1 |
| 20°   | 5642.4 | 5627.2 | 5551.5 | 5453.0 | 5400.0 |
| 22.5° | 5422.7 | 5422.7 | 5331.9 | 5203.1 | 5150.1 |
| 25°   | 5218.3 | 5188.0 | 5104.7 | 4922.9 | 4786.6 |
| 27.5° | 4983.5 | 4938.0 | 4847.1 | 4589.6 | 4430.6 |
| 30°   | 4726.0 | 4703.2 | 4574.5 | 4241.3 | 4120.1 |
| 32.5° | 4483.6 | 4445.7 | 4309.4 | 3961.0 | 3862.6 |
| 35°   | 4233.7 | 4203.4 | 3998.9 | 3695.9 | 3605.1 |
| 37.5° | 3983.7 | 3945.9 | 3688.4 | 3446.0 | 3332.4 |
| 40°   | 3733.8 | 3688.4 | 3408.1 | 3188.5 | 3067.3 |
| 42.5° | 3499.0 | 3438.4 | 3165.8 | 2931.0 | 2794.7 |
| 45°   | 3249.1 | 3180.9 | 2908.3 | 2665.9 | 2559.9 |
| 47.5° | 2999.2 | 2938.6 | 2688.7 | 2438.7 | 2317.5 |
| 50°   | 2734.1 | 2681.1 | 2453.9 | 2203.9 | 2075.2 |
| 52.5° | 2514.5 | 2431.1 | 2211.5 | 1961.6 | 1855.5 |
| 55°   | 2257.0 | 2188.8 | 1984.3 | 1749.5 | 1658.6 |
| 57.5° | 2022.2 | 1954.0 | 1764.7 | 1545.0 | 1469.3 |
| 60°   | 1802.5 | 1704.1 | 1545.0 | 1355.7 | 1295.1 |
| 62.5° | 1560.2 | 1484.4 | 1348.1 | 1189.1 | 1264.8 |
| 65°   | 1340.5 | 1264.8 | 1143.6 | 1166.3 | 969.4  |
| 67.5° | 1098.2 | 1060.3 | 954.3  | 848.3  | 818.0  |
| 70°   | 893.7  | 848.3  | 810.4  | 696.8  | 666.5  |
| 72.5° | 711.9  | 666.5  | 613.5  | 552.9  | 530.2  |
| 75°   | 537.7  | 499.9  | 469.6  | 446.8  | 492.3  |
| 77.5° | 371.1  | 356.0  | 333.2  | 310.5  | 302.9  |
| 80°   | 242.4  | 234.8  | 227.2  | 219.6  | 212.1  |
| 82.5° | 143.9  | 143.9  | 143.9  | 143.9  | 143.9  |
| 85°   | 75.7   | 83.3   | 90.9   | 98.5   | 106.0  |
| 87.5° | 45.4   | 45.4   | 53.0   | 60.6   | 68.2   |
| 90°   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |

(END OF REPORT)