

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: P564080

Luminaire Tested: FSR-24-4-LD4-4STD-40-UNV-80-84-EDD-90

Issue Date: 7/20/2021

**Test Information**

Test Method: LM-79-2019  
Report Number: P564080  
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-80-84-EDD-90  
Description: 2X4 FSR TROFFER WITH .125 PRISMATIC ACRYLIC FIXTURE SIDE AND .125 CLEAR PC ENVIRONM  
SIDE LENSES WITH, 90 CRI AND 4000K CCT LEDS  
Light Source: -  
Ballast/Driver: -

**Summary**

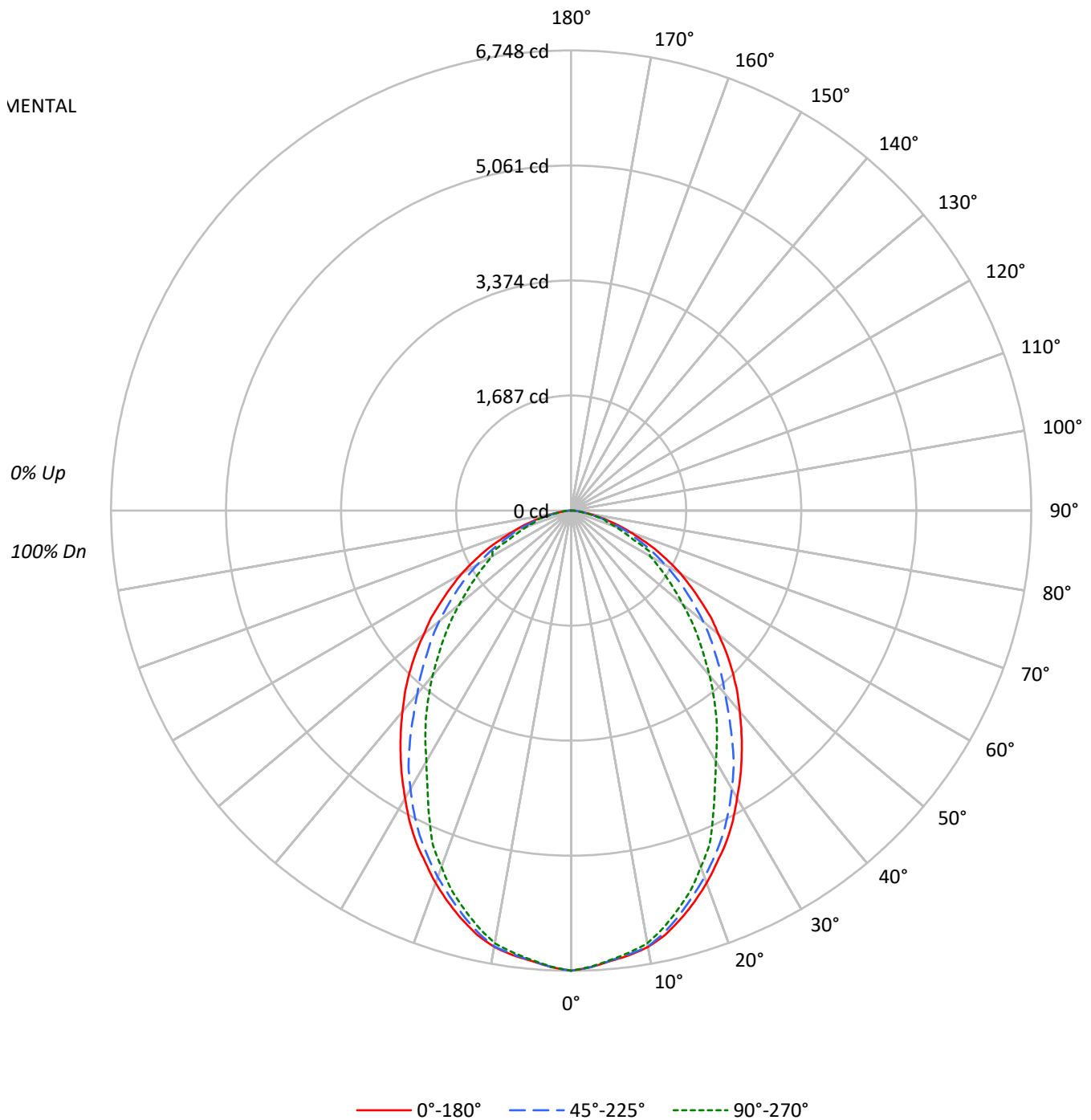
Lumens per Lamp: N/A  
Luminaire Lumens: 13247.0 lumens  
Efficiency: N/A  
Efficacy: 99.5 lumens/watt  
Spacing Criteria (0/90/45): 1.1 / 1 / 1.15  
Luminous Opening: Rectangular (W 2' x L: 4' x H: 0')  
CIE Type: Direct  
  
Input Watts (W): 133.2  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage 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  | 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°  | 9079 | 9079 | 9079 |
| 5°  | 8956 | 8945 | 8935 |
| 10° | 8878 | 8867 | 8804 |
| 15° | 8639 | 8552 | 8432 |
| 20° | 8321 | 8187 | 7964 |
| 25° | 7979 | 7806 | 7319 |
| 30° | 7563 | 7320 | 6593 |
| 35° | 7163 | 6765 | 6099 |
| 40° | 6755 | 6166 | 5549 |
| 45° | 6368 | 5700 | 5017 |
| 50° | 5895 | 5291 | 4474 |
| 55° | 5453 | 4795 | 4008 |
| 60° | 4996 | 4282 | 3590 |
| 65° | 4396 | 3750 | 3179 |
| 70° | 3621 | 3284 | 2701 |
| 75° | 2879 | 2515 | 2636 |
| 80° | 1934 | 1813 | 1692 |
| 85° | 1204 | 1445 | 1686 |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 6368 cd/sqm



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**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 628.1   | 4.7       |
| 10°-20°   | 1723.9  | 13.0      |
| 20°-30°   | 2386.6  | 18.0      |
| 30°-40°   | 2544.8  | 19.2      |
| 40°-50°   | 2321.6  | 17.5      |
| 50°-60°   | 1818.8  | 13.7      |
| 60°-70°   | 1185.4  | 8.9       |
| 70°-80°   | 525.2   | 4.0       |
| 80°-90°   | 112.7   | 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°    | 4738.6  | 35.8      |
| 0°-40°    | 7283.3  | 55.0      |
| 0°-60°    | 11423.7 | 86.2      |
| 0°-90°    | 13247.0 | 100.0     |
| 90°-120°  | 0.0     | 0.0       |
| 90°-150°  | 0.0     | 0.0       |
| 90°-180°  | 0.0     | 0.0       |
| 0°-180°   | 13247.0 | 100.0     |

**CANDELA DISTRIBUTION:**

|     | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|-----|------|-------|------|-------|------|------|
| 0°  | 6748 | 6748  | 6748 | 6748  | 6748 |      |
| 5°  | 6631 | 6623  | 6623 | 6615  | 6615 | 629  |
| 15° | 6202 | 6202  | 6139 | 6077  | 6054 | 1743 |
| 25° | 5375 | 5344  | 5258 | 5071  | 4930 | 2468 |
| 35° | 4361 | 4330  | 4119 | 3807  | 3713 | 2726 |
| 45° | 3347 | 3276  | 2996 | 2746  | 2637 | 2578 |
| 55° | 2325 | 2254  | 2044 | 1802  | 1708 | 2085 |
| 65° | 1381 | 1303  | 1178 | 1201  | 998  | 1361 |
| 75° | 554  | 515   | 484  | 460   | 507  | 594  |
| 85° | 78   | 86    | 94   | 101   | 109  | 108  |
| 90° | 0    | 0     | 0    | 0     | 0    |      |



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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|-------|--------|--------|--------|--------|--------|
| 0°    | 6747.8 | 6747.8 | 6747.8 | 6747.8 | 6747.8 |
| 2.5°  | 6701.0 | 6701.0 | 6701.0 | 6693.2 | 6693.2 |
| 5°    | 6630.8 | 6623.0 | 6623.0 | 6615.2 | 6615.2 |
| 7.5°  | 6576.2 | 6568.4 | 6560.6 | 6552.8 | 6537.2 |
| 10°   | 6498.2 | 6498.2 | 6490.4 | 6451.4 | 6443.6 |
| 12.5° | 6373.4 | 6365.6 | 6334.4 | 6279.8 | 6264.2 |
| 15°   | 6201.8 | 6201.8 | 6139.4 | 6077.0 | 6053.6 |
| 17.5° | 6014.6 | 6006.8 | 5928.7 | 5866.3 | 5835.1 |
| 20°   | 5811.7 | 5796.1 | 5718.1 | 5616.7 | 5562.1 |
| 22.5° | 5585.5 | 5585.5 | 5491.9 | 5359.3 | 5304.7 |
| 25°   | 5374.9 | 5343.7 | 5257.9 | 5070.6 | 4930.2 |
| 27.5° | 5133.0 | 5086.2 | 4992.6 | 4727.4 | 4563.6 |
| 30°   | 4867.8 | 4844.4 | 4711.8 | 4368.5 | 4243.7 |
| 32.5° | 4618.2 | 4579.2 | 4438.8 | 4079.9 | 3978.5 |
| 35°   | 4360.7 | 4329.5 | 4118.9 | 3806.9 | 3713.3 |
| 37.5° | 4103.3 | 4064.3 | 3799.1 | 3549.4 | 3432.4 |
| 40°   | 3845.9 | 3799.1 | 3510.4 | 3284.2 | 3159.4 |
| 42.5° | 3604.1 | 3541.6 | 3260.8 | 3019.0 | 2878.6 |
| 45°   | 3346.6 | 3276.4 | 2995.6 | 2745.9 | 2636.7 |
| 47.5° | 3089.2 | 3026.8 | 2769.3 | 2511.9 | 2387.1 |
| 50°   | 2816.2 | 2761.5 | 2527.5 | 2270.1 | 2137.5 |
| 52.5° | 2589.9 | 2504.1 | 2277.9 | 2020.5 | 1911.2 |
| 55°   | 2324.7 | 2254.5 | 2043.9 | 1802.0 | 1708.4 |
| 57.5° | 2082.9 | 2012.7 | 1817.6 | 1591.4 | 1513.4 |
| 60°   | 1856.6 | 1755.2 | 1591.4 | 1396.4 | 1334.0 |
| 62.5° | 1607.0 | 1529.0 | 1388.6 | 1224.8 | 1302.8 |
| 65°   | 1380.8 | 1302.8 | 1177.9 | 1201.4 | 998.5  |
| 67.5° | 1131.1 | 1092.1 | 982.9  | 873.7  | 842.5  |
| 70°   | 920.5  | 873.7  | 834.7  | 717.7  | 686.5  |
| 72.5° | 733.3  | 686.5  | 631.9  | 569.5  | 546.1  |
| 75°   | 553.9  | 514.9  | 483.7  | 460.3  | 507.1  |
| 77.5° | 382.2  | 366.6  | 343.2  | 319.8  | 312.0  |
| 80°   | 249.6  | 241.8  | 234.0  | 226.2  | 218.4  |
| 82.5° | 148.2  | 148.2  | 148.2  | 148.2  | 148.2  |
| 85°   | 78.0   | 85.8   | 93.6   | 101.4  | 109.2  |
| 87.5° | 46.8   | 46.8   | 54.6   | 62.4   | 70.2   |
| 90°   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |

(END OF REPORT)