

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: P563512

Luminaire Tested: FSR-24-4-LD4-3STD-40-UNV-80-88-EDD-90

Issue Date: 7/20/2021

**Test Information**

Test Method: LM-79-2019  
Report Number: P563512  
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-LD4-3STD-40-UNV-80-88-EDD-90  
Description: 2X4 FSR TROFFER WITH .125 PRISMATIC ACRYLIC FIXTURE SIDE AND .500 CLEAR PC ENVIRONM  
SIDE LENSES WITH, 90 CRI AND 4000K CCT LEDS  
Light Source: -  
Ballast/Driver: -

**Summary**

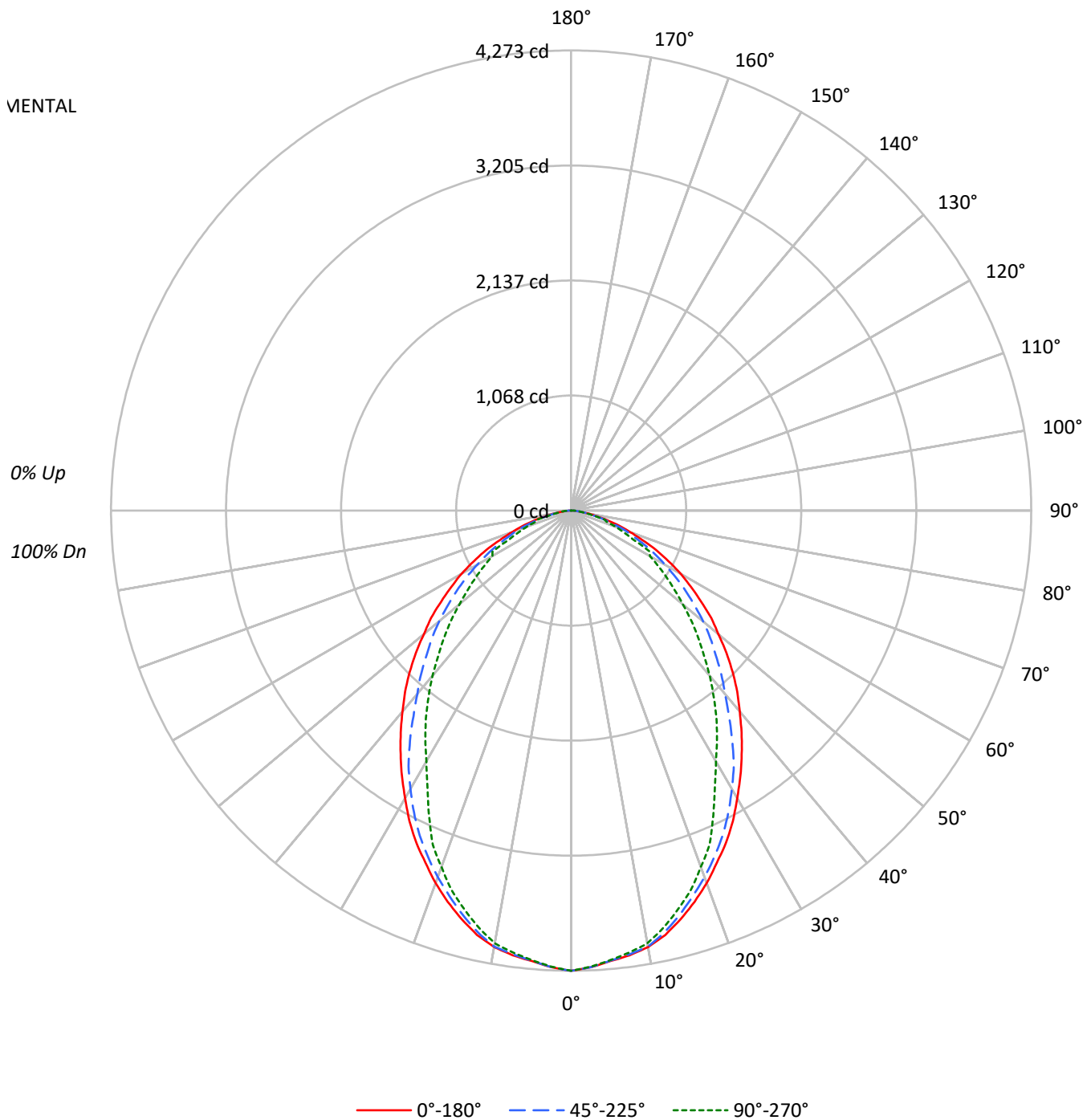
Lumens per Lamp: N/A  
Luminaire Lumens: 8389.0 lumens  
Efficiency: N/A  
Efficacy: 84.0 lumens/watt  
Spacing Criteria (0/90/45): 1.1 / 1 / 1.15  
Luminous Opening: Rectangular (W 2' x L: 4' x H: 0')  
CIE Type: Direct  
  
Input Watts (W): 99.9  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage 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°  | 5750 | 5750 | 5750 |
| 5°  | 5671 | 5665 | 5658 |
| 10° | 5622 | 5616 | 5575 |
| 15° | 5471 | 5416 | 5340 |
| 20° | 5270 | 5185 | 5043 |
| 25° | 5053 | 4943 | 4635 |
| 30° | 4789 | 4636 | 4175 |
| 35° | 4536 | 4284 | 3862 |
| 40° | 4278 | 3905 | 3514 |
| 45° | 4033 | 3610 | 3177 |
| 50° | 3733 | 3350 | 2833 |
| 55° | 3453 | 3036 | 2538 |
| 60° | 3164 | 2712 | 2273 |
| 65° | 2784 | 2375 | 2013 |
| 70° | 2293 | 2079 | 1710 |
| 75° | 1824 | 1592 | 1669 |
| 80° | 1225 | 1148 | 1072 |
| 85° | 763  | 915  | 1068 |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 4033 cd/sqm



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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 397.8  | 4.7       |
| 10°-20°   | 1091.7 | 13.0      |
| 20°-30°   | 1511.4 | 18.0      |
| 30°-40°   | 1611.6 | 19.2      |
| 40°-50°   | 1470.2 | 17.5      |
| 50°-60°   | 1151.8 | 13.7      |
| 60°-70°   | 750.7  | 8.9       |
| 70°-80°   | 332.6  | 4.0       |
| 80°-90°   | 71.4   | 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°    | 3000.8 | 35.8      |
| 0°-40°    | 4612.4 | 55.0      |
| 0°-60°    | 7234.3 | 86.2      |
| 0°-90°    | 8389.0 | 100.0     |
| 90°-120°  | 0.0    | 0.0       |
| 90°-150°  | 0.0    | 0.0       |
| 90°-180°  | 0.0    | 0.0       |
| 0°-180°   | 8389.0 | 100.0     |

**CANDELA DISTRIBUTION:**

|     | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|-----|------|-------|------|-------|------|------|
| 0°  | 4273 | 4273  | 4273 | 4273  | 4273 |      |
| 5°  | 4199 | 4194  | 4194 | 4189  | 4189 | 399  |
| 15° | 3927 | 3927  | 3888 | 3848  | 3834 | 1104 |
| 25° | 3404 | 3384  | 3330 | 3211  | 3122 | 1563 |
| 35° | 2762 | 2742  | 2608 | 2411  | 2352 | 1726 |
| 45° | 2119 | 2075  | 1897 | 1739  | 1670 | 1633 |
| 55° | 1472 | 1428  | 1294 | 1141  | 1082 | 1320 |
| 65° | 874  | 825   | 746  | 761   | 632  | 862  |
| 75° | 351  | 326   | 306  | 292   | 321  | 376  |
| 85° | 49   | 54    | 59   | 64    | 69   | 69   |
| 90° | 0    | 0     | 0    | 0     | 0    |      |



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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|-------|--------|--------|--------|--------|--------|
| 0°    | 4273.2 | 4273.2 | 4273.2 | 4273.2 | 4273.2 |
| 2.5°  | 4243.6 | 4243.6 | 4243.6 | 4238.7 | 4238.7 |
| 5°    | 4199.1 | 4194.2 | 4194.2 | 4189.3 | 4189.3 |
| 7.5°  | 4164.6 | 4159.6 | 4154.7 | 4149.7 | 4139.9 |
| 10°   | 4115.2 | 4115.2 | 4110.2 | 4085.5 | 4080.6 |
| 12.5° | 4036.1 | 4031.2 | 4011.4 | 3976.8 | 3967.0 |
| 15°   | 3927.4 | 3927.4 | 3887.9 | 3848.4 | 3833.6 |
| 17.5° | 3808.9 | 3803.9 | 3754.5 | 3715.0 | 3695.2 |
| 20°   | 3680.4 | 3670.5 | 3621.1 | 3556.9 | 3522.3 |
| 22.5° | 3537.2 | 3537.2 | 3477.9 | 3393.9 | 3359.3 |
| 25°   | 3403.8 | 3384.0 | 3329.7 | 3211.1 | 3122.2 |
| 27.5° | 3250.6 | 3221.0 | 3161.7 | 2993.7 | 2890.0 |
| 30°   | 3082.7 | 3067.8 | 2983.9 | 2766.5 | 2687.5 |
| 32.5° | 2924.6 | 2899.9 | 2811.0 | 2583.7 | 2519.5 |
| 35°   | 2761.6 | 2741.8 | 2608.4 | 2410.8 | 2351.5 |
| 37.5° | 2598.5 | 2573.8 | 2405.9 | 2247.8 | 2173.7 |
| 40°   | 2435.5 | 2405.9 | 2223.1 | 2079.8 | 2000.8 |
| 42.5° | 2282.4 | 2242.8 | 2065.0 | 1911.8 | 1822.9 |
| 45°   | 2119.3 | 2074.9 | 1897.0 | 1738.9 | 1669.8 |
| 47.5° | 1956.3 | 1916.8 | 1753.8 | 1590.7 | 1511.7 |
| 50°   | 1783.4 | 1748.8 | 1600.6 | 1437.6 | 1353.6 |
| 52.5° | 1640.1 | 1585.8 | 1442.5 | 1279.5 | 1210.3 |
| 55°   | 1472.2 | 1427.7 | 1294.3 | 1141.2 | 1081.9 |
| 57.5° | 1319.0 | 1274.6 | 1151.1 | 1007.8 | 958.4  |
| 60°   | 1175.8 | 1111.5 | 1007.8 | 884.3  | 844.8  |
| 62.5° | 1017.7 | 968.3  | 879.3  | 775.6  | 825.0  |
| 65°   | 874.4  | 825.0  | 746.0  | 760.8  | 632.3  |
| 67.5° | 716.3  | 691.6  | 622.5  | 553.3  | 533.5  |
| 70°   | 582.9  | 553.3  | 528.6  | 454.5  | 434.7  |
| 72.5° | 464.4  | 434.7  | 400.2  | 360.6  | 345.8  |
| 75°   | 350.8  | 326.1  | 306.3  | 291.5  | 321.1  |
| 77.5° | 242.1  | 232.2  | 217.4  | 202.5  | 197.6  |
| 80°   | 158.1  | 153.1  | 148.2  | 143.3  | 138.3  |
| 82.5° | 93.9   | 93.9   | 93.9   | 93.9   | 93.9   |
| 85°   | 49.4   | 54.3   | 59.3   | 64.2   | 69.2   |
| 87.5° | 29.6   | 29.6   | 34.6   | 39.5   | 44.5   |
| 90°   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |

(END OF REPORT)