

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: P563825

Luminaire Tested: FSR-24-4-LD4-4LO-35-UNV-80-84-EDD

Issue Date: 7/20/2021

**Test Information**

Test Method: LM-79-2019  
Report Number: P563825  
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-LD4-4LO-35-UNV-80-84-EDD  
Description: 2X4 FSR TROFFER WITH .125 PRISMATIC ACRYLIC FIXTURE SIDE AND .125 CLEAR PC ENVIRONM  
SIDE LENSES WITH, 80 CRI AND 3500K CCT LEDS  
Light Source: -  
Ballast/Driver: -

**Summary**

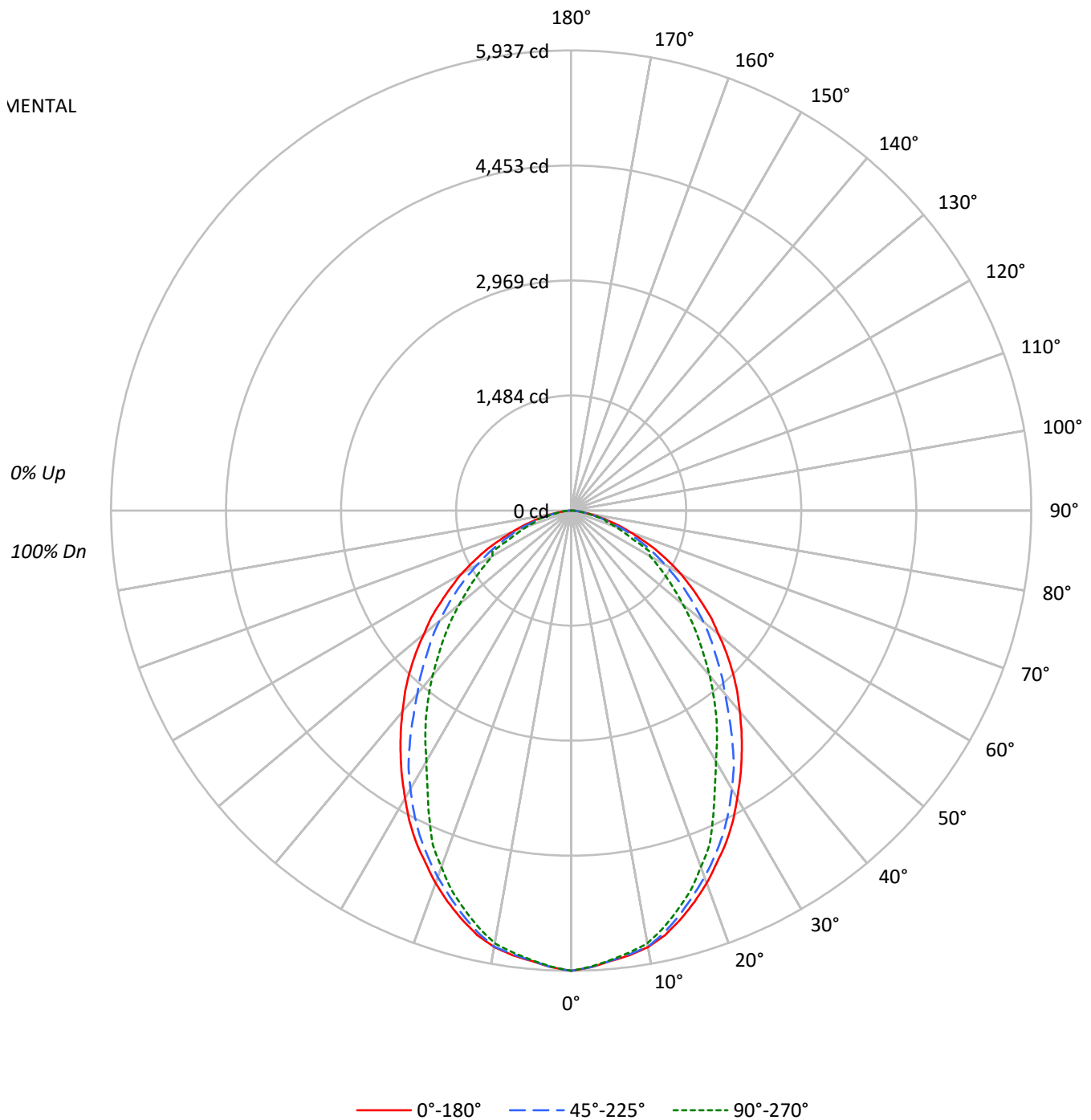
Lumens per Lamp: N/A  
Luminaire Lumens: 11656.0 lumens  
Efficiency: N/A  
Efficacy: 124.5 lumens/watt  
Spacing Criteria (0/90/45): 1.1 / 1 / 1.15  
Luminous Opening: Rectangular (W 2' x L: 4' x H: 0')  
CIE Type: Direct  
  
Input Watts (W): 93.6  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage 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°  | 7989 | 7989 | 7989 |
| 5°  | 7880 | 7871 | 7862 |
| 10° | 7812 | 7802 | 7746 |
| 15° | 7601 | 7525 | 7420 |
| 20° | 7322 | 7204 | 7008 |
| 25° | 7021 | 6868 | 6440 |
| 30° | 6655 | 6441 | 5801 |
| 35° | 6302 | 5953 | 5367 |
| 40° | 5944 | 5425 | 4883 |
| 45° | 5603 | 5015 | 4415 |
| 50° | 5187 | 4655 | 3937 |
| 55° | 4798 | 4219 | 3526 |
| 60° | 4396 | 3768 | 3159 |
| 65° | 3868 | 3300 | 2797 |
| 70° | 3186 | 2889 | 2376 |
| 75° | 2533 | 2213 | 2320 |
| 80° | 1702 | 1595 | 1489 |
| 85° | 1059 | 1272 | 1484 |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 5603 cd/sqm



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**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 552.7   | 4.7       |
| 10°-20°   | 1516.8  | 13.0      |
| 20°-30°   | 2099.9  | 18.0      |
| 30°-40°   | 2239.1  | 19.2      |
| 40°-50°   | 2042.8  | 17.5      |
| 50°-60°   | 1600.3  | 13.7      |
| 60°-70°   | 1043.0  | 8.9       |
| 70°-80°   | 462.1   | 4.0       |
| 80°-90°   | 99.2    | 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°    | 4169.5  | 35.8      |
| 0°-40°    | 6408.6  | 55.0      |
| 0°-60°    | 10051.7 | 86.2      |
| 0°-90°    | 11656.0 | 100.0     |
| 90°-120°  | 0.0     | 0.0       |
| 90°-150°  | 0.0     | 0.0       |
| 90°-180°  | 0.0     | 0.0       |
| 0°-180°   | 11656.0 | 100.0     |

**CANDELA DISTRIBUTION:**

|     | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|-----|------|-------|------|-------|------|------|
| 0°  | 5937 | 5937  | 5937 | 5937  | 5937 |      |
| 5°  | 5834 | 5828  | 5828 | 5821  | 5821 | 554  |
| 15° | 5457 | 5457  | 5402 | 5347  | 5326 | 1534 |
| 25° | 4729 | 4702  | 4626 | 4462  | 4338 | 2171 |
| 35° | 3837 | 3810  | 3624 | 3350  | 3267 | 2399 |
| 45° | 2945 | 2883  | 2636 | 2416  | 2320 | 2268 |
| 55° | 2046 | 1984  | 1798 | 1586  | 1503 | 1835 |
| 65° | 1215 | 1146  | 1036 | 1057  | 879  | 1197 |
| 75° | 487  | 453   | 426  | 405   | 446  | 522  |
| 85° | 69   | 76    | 82   | 89    | 96   | 95   |
| 90° | 0    | 0     | 0    | 0     | 0    |      |



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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|-------|--------|--------|--------|--------|--------|
| 0°    | 5937.4 | 5937.4 | 5937.4 | 5937.4 | 5937.4 |
| 2.5°  | 5896.2 | 5896.2 | 5896.2 | 5889.4 | 5889.4 |
| 5°    | 5834.4 | 5827.6 | 5827.6 | 5820.7 | 5820.7 |
| 7.5°  | 5786.4 | 5779.5 | 5772.7 | 5765.8 | 5752.1 |
| 10°   | 5717.8 | 5717.8 | 5710.9 | 5676.6 | 5669.7 |
| 12.5° | 5607.9 | 5601.1 | 5573.6 | 5525.6 | 5511.8 |
| 15°   | 5456.9 | 5456.9 | 5402.0 | 5347.1 | 5326.5 |
| 17.5° | 5292.2 | 5285.3 | 5216.7 | 5161.8 | 5134.3 |
| 20°   | 5113.7 | 5100.0 | 5031.4 | 4942.1 | 4894.1 |
| 22.5° | 4914.7 | 4914.7 | 4832.3 | 4715.6 | 4667.6 |
| 25°   | 4729.3 | 4701.9 | 4626.4 | 4461.6 | 4338.1 |
| 27.5° | 4516.6 | 4475.4 | 4393.0 | 4159.6 | 4015.5 |
| 30°   | 4283.2 | 4262.6 | 4145.9 | 3843.9 | 3734.0 |
| 32.5° | 4063.5 | 4029.2 | 3905.6 | 3589.9 | 3500.7 |
| 35°   | 3837.0 | 3809.6 | 3624.2 | 3349.7 | 3267.3 |
| 37.5° | 3610.5 | 3576.2 | 3342.8 | 3123.1 | 3020.2 |
| 40°   | 3384.0 | 3342.8 | 3088.8 | 2889.8 | 2779.9 |
| 42.5° | 3171.2 | 3116.3 | 2869.2 | 2656.4 | 2532.8 |
| 45°   | 2944.7 | 2882.9 | 2635.8 | 2416.1 | 2320.1 |
| 47.5° | 2718.2 | 2663.3 | 2436.7 | 2210.2 | 2100.4 |
| 50°   | 2477.9 | 2429.9 | 2224.0 | 1997.4 | 1880.8 |
| 52.5° | 2278.9 | 2203.4 | 2004.3 | 1777.8 | 1681.7 |
| 55°   | 2045.5 | 1983.7 | 1798.4 | 1585.6 | 1503.2 |
| 57.5° | 1832.7 | 1770.9 | 1599.3 | 1400.3 | 1331.6 |
| 60°   | 1633.6 | 1544.4 | 1400.3 | 1228.7 | 1173.8 |
| 62.5° | 1414.0 | 1345.4 | 1221.8 | 1077.7 | 1146.3 |
| 65°   | 1214.9 | 1146.3 | 1036.5 | 1057.1 | 878.6  |
| 67.5° | 995.3  | 961.0  | 864.9  | 768.8  | 741.3  |
| 70°   | 810.0  | 768.8  | 734.5  | 631.5  | 604.0  |
| 72.5° | 645.2  | 604.0  | 556.0  | 501.1  | 480.5  |
| 75°   | 487.3  | 453.0  | 425.6  | 405.0  | 446.2  |
| 77.5° | 336.3  | 322.6  | 302.0  | 281.4  | 274.6  |
| 80°   | 219.6  | 212.8  | 205.9  | 199.1  | 192.2  |
| 82.5° | 130.4  | 130.4  | 130.4  | 130.4  | 130.4  |
| 85°   | 68.6   | 75.5   | 82.4   | 89.2   | 96.1   |
| 87.5° | 41.2   | 41.2   | 48.0   | 54.9   | 61.8   |
| 90°   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |

(END OF REPORT)