

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: P563376

Luminaire Tested: FSR-24-4-LD4-3LO-50-UNV-80-84-EDD-90

Issue Date: 7/20/2021

**Test Information**

Test Method: LM-79-2019  
Report Number: P563376  
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-LD4-3LO-50-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 5000K CCT LEDS  
Light Source: -  
Ballast/Driver: -

**Summary**

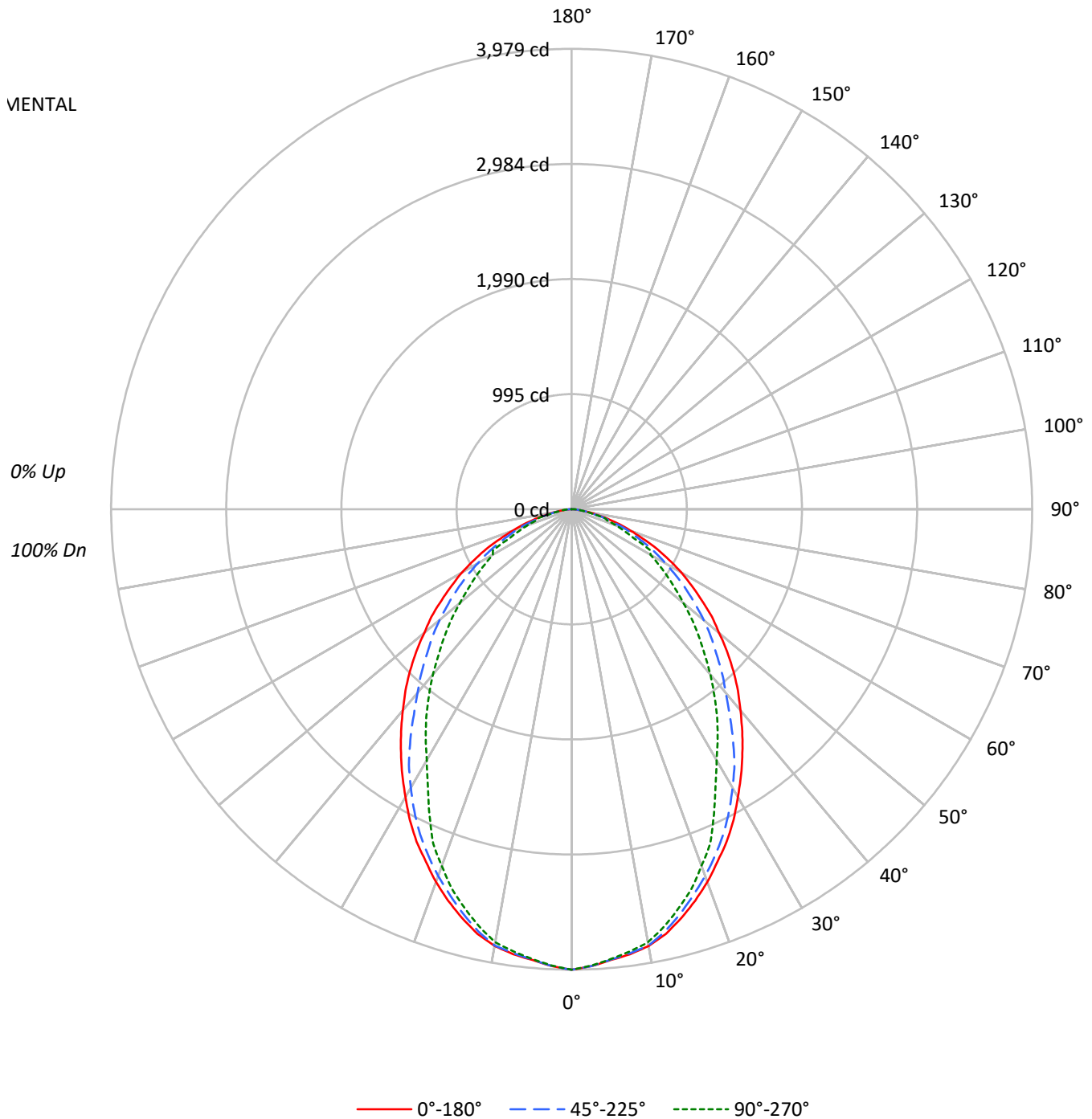
Lumens per Lamp: N/A  
Luminaire Lumens: 7812.0 lumens  
Efficiency: N/A  
Efficacy: 111.3 lumens/watt  
Spacing Criteria (0/90/45): 1.1 / 1 / 1.15  
Luminous Opening: Rectangular (W 2' x L: 4' x H: 0')  
CIE Type: Direct  
  
Input Watts (W): 70.2  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage 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 | 0 |    |  |  |  |  |  |  |  |  |    |  |  |  |  |  |  |  |  |   |
| RCR |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |    |    |    |    |    |    |    |    |   |    |  |  |  |  |  |  |  |  |    |  |  |  |  |  |  |  |  |   |
| 0   | 119 | 119 | 119 | 119 | 116 | 116 | 116 | 116 | 111 | 111 | 111 | 106 | 106 | 106 | 102 | 102 | 102 | 100 |    |    |    |    |    |    |    |    |   |    |  |  |  |  |  |  |  |  |    |  |  |  |  |  |  |  |  |   |
| 1   | 110 | 106 | 102 | 99  | 108 | 104 | 100 | 97  | 100 | 97  | 94  | 96  | 94  | 91  | 92  | 90  | 89  | 87  |    |    |    |    |    |    |    |    |   |    |  |  |  |  |  |  |  |  |    |  |  |  |  |  |  |  |  |   |
| 2   | 101 | 94  | 88  | 83  | 99  | 92  | 87  | 82  | 89  | 84  | 80  | 86  | 82  | 78  | 83  | 79  | 77  | 75  |    |    |    |    |    |    |    |    |   |    |  |  |  |  |  |  |  |  |    |  |  |  |  |  |  |  |  |   |
| 3   | 93  | 84  | 77  | 71  | 91  | 82  | 76  | 70  | 79  | 74  | 69  | 77  | 72  | 68  | 74  | 70  | 67  | 65  |    |    |    |    |    |    |    |    |   |    |  |  |  |  |  |  |  |  |    |  |  |  |  |  |  |  |  |   |
| 4   | 86  | 75  | 67  | 61  | 84  | 74  | 66  | 61  | 72  | 65  | 60  | 69  | 64  | 59  | 67  | 62  | 58  | 56  |    |    |    |    |    |    |    |    |   |    |  |  |  |  |  |  |  |  |    |  |  |  |  |  |  |  |  |   |
| 5   | 80  | 68  | 60  | 54  | 78  | 67  | 59  | 53  | 65  | 58  | 53  | 63  | 57  | 52  | 61  | 56  | 52  | 50  |    |    |    |    |    |    |    |    |   |    |  |  |  |  |  |  |  |  |    |  |  |  |  |  |  |  |  |   |
| 6   | 74  | 62  | 53  | 48  | 72  | 61  | 53  | 47  | 59  | 52  | 47  | 57  | 51  | 47  | 56  | 50  | 46  | 44  |    |    |    |    |    |    |    |    |   |    |  |  |  |  |  |  |  |  |    |  |  |  |  |  |  |  |  |   |
| 7   | 69  | 56  | 48  | 43  | 67  | 56  | 48  | 42  | 54  | 47  | 42  | 53  | 46  | 42  | 51  | 46  | 42  | 40  |    |    |    |    |    |    |    |    |   |    |  |  |  |  |  |  |  |  |    |  |  |  |  |  |  |  |  |   |
| 8   | 65  | 52  | 44  | 38  | 63  | 51  | 44  | 38  | 50  | 43  | 38  | 49  | 42  | 38  | 48  | 42  | 38  | 36  |    |    |    |    |    |    |    |    |   |    |  |  |  |  |  |  |  |  |    |  |  |  |  |  |  |  |  |   |
| 9   | 61  | 48  | 40  | 35  | 59  | 47  | 40  | 35  | 46  | 39  | 35  | 45  | 39  | 34  | 44  | 38  | 34  | 33  |    |    |    |    |    |    |    |    |   |    |  |  |  |  |  |  |  |  |    |  |  |  |  |  |  |  |  |   |
| 10  | 57  | 44  | 37  | 32  | 56  | 44  | 37  | 32  | 43  | 36  | 32  | 42  | 36  | 32  | 41  | 36  | 32  | 30  |    |    |    |    |    |    |    |    |   |    |  |  |  |  |  |  |  |  |    |  |  |  |  |  |  |  |  |   |

**AVERAGE LUMINANCE (cd/sqm):**

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 5354 | 5354 | 5354 |
| 5°  | 5281 | 5275 | 5269 |
| 10° | 5236 | 5229 | 5192 |
| 15° | 5094 | 5043 | 4973 |
| 20° | 4907 | 4828 | 4697 |
| 25° | 4706 | 4603 | 4316 |
| 30° | 4460 | 4317 | 3888 |
| 35° | 4224 | 3990 | 3597 |
| 40° | 3984 | 3636 | 3273 |
| 45° | 3755 | 3361 | 2959 |
| 50° | 3476 | 3120 | 2638 |
| 55° | 3216 | 2827 | 2363 |
| 60° | 2946 | 2525 | 2117 |
| 65° | 2592 | 2212 | 1875 |
| 70° | 2135 | 1936 | 1592 |
| 75° | 1698 | 1483 | 1554 |
| 80° | 1141 | 1069 | 998  |
| 85° | 710  | 852  | 994  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 3755 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 370.4  | 4.7       |
| 10°-20°   | 1016.6 | 13.0      |
| 20°-30°   | 1407.4 | 18.0      |
| 30°-40°   | 1500.7 | 19.2      |
| 40°-50°   | 1369.1 | 17.5      |
| 50°-60°   | 1072.6 | 13.7      |
| 60°-70°   | 699.1  | 8.9       |
| 70°-80°   | 309.7  | 4.0       |
| 80°-90°   | 66.5   | 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°    | 2794.4 | 35.8      |
| 0°-40°    | 4295.1 | 55.0      |
| 0°-60°    | 6736.8 | 86.2      |
| 0°-90°    | 7812.0 | 100.0     |
| 90°-120°  | 0.0    | 0.0       |
| 90°-150°  | 0.0    | 0.0       |
| 90°-180°  | 0.0    | 0.0       |
| 0°-180°   | 7812.0 | 100.0     |

**CANDELA DISTRIBUTION:**

|     | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|-----|------|-------|------|-------|------|------|
| 0°  | 3979 | 3979  | 3979 | 3979  | 3979 |      |
| 5°  | 3910 | 3906  | 3906 | 3901  | 3901 | 371  |
| 15° | 3657 | 3657  | 3620 | 3584  | 3570 | 1028 |
| 25° | 3170 | 3151  | 3101 | 2990  | 2907 | 1455 |
| 35° | 2572 | 2553  | 2429 | 2245  | 2190 | 1608 |
| 45° | 1974 | 1932  | 1766 | 1619  | 1555 | 1520 |
| 55° | 1371 | 1330  | 1205 | 1063  | 1008 | 1230 |
| 65° | 814  | 768   | 695  | 708   | 589  | 802  |
| 75° | 327  | 304   | 285  | 271   | 299  | 350  |
| 85° | 46   | 51    | 55   | 60    | 64   | 64   |
| 90° | 0    | 0     | 0    | 0     | 0    |      |



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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|-------|--------|--------|--------|--------|--------|
| 0°    | 3979.3 | 3979.3 | 3979.3 | 3979.3 | 3979.3 |
| 2.5°  | 3951.7 | 3951.7 | 3951.7 | 3947.1 | 3947.1 |
| 5°    | 3910.3 | 3905.7 | 3905.7 | 3901.1 | 3901.1 |
| 7.5°  | 3878.1 | 3873.5 | 3868.9 | 3864.3 | 3855.1 |
| 10°   | 3832.1 | 3832.1 | 3827.5 | 3804.5 | 3799.9 |
| 12.5° | 3758.5 | 3753.9 | 3735.5 | 3703.3 | 3694.1 |
| 15°   | 3657.3 | 3657.3 | 3620.5 | 3583.7 | 3569.9 |
| 17.5° | 3546.9 | 3542.3 | 3496.3 | 3459.5 | 3441.1 |
| 20°   | 3427.3 | 3418.1 | 3372.1 | 3312.3 | 3280.1 |
| 22.5° | 3293.9 | 3293.9 | 3238.7 | 3160.5 | 3128.3 |
| 25°   | 3169.7 | 3151.3 | 3100.7 | 2990.2 | 2907.4 |
| 27.5° | 3027.0 | 2999.4 | 2944.2 | 2787.8 | 2691.2 |
| 30°   | 2870.6 | 2856.8 | 2778.6 | 2576.2 | 2502.6 |
| 32.5° | 2723.4 | 2700.4 | 2617.6 | 2406.0 | 2346.2 |
| 35°   | 2571.6 | 2553.2 | 2429.0 | 2245.0 | 2189.8 |
| 37.5° | 2419.8 | 2396.8 | 2240.4 | 2093.2 | 2024.2 |
| 40°   | 2268.0 | 2240.4 | 2070.2 | 1936.8 | 1863.2 |
| 42.5° | 2125.4 | 2088.6 | 1923.0 | 1780.3 | 1697.5 |
| 45°   | 1973.6 | 1932.2 | 1766.5 | 1619.3 | 1554.9 |
| 47.5° | 1821.8 | 1784.9 | 1633.1 | 1481.3 | 1407.7 |
| 50°   | 1660.7 | 1628.5 | 1490.5 | 1338.7 | 1260.5 |
| 52.5° | 1527.3 | 1476.7 | 1343.3 | 1191.5 | 1127.1 |
| 55°   | 1370.9 | 1329.5 | 1205.3 | 1062.7 | 1007.5 |
| 57.5° | 1228.3 | 1186.9 | 1071.9 | 938.5  | 892.5  |
| 60°   | 1094.9 | 1035.1 | 938.5  | 823.5  | 786.7  |
| 62.5° | 947.7  | 901.7  | 818.9  | 722.3  | 768.3  |
| 65°   | 814.3  | 768.3  | 694.7  | 708.5  | 588.8  |
| 67.5° | 667.1  | 644.1  | 579.6  | 515.2  | 496.8  |
| 70°   | 542.8  | 515.2  | 492.2  | 423.2  | 404.8  |
| 72.5° | 432.4  | 404.8  | 372.6  | 335.8  | 322.0  |
| 75°   | 326.6  | 303.6  | 285.2  | 271.4  | 299.0  |
| 77.5° | 225.4  | 216.2  | 202.4  | 188.6  | 184.0  |
| 80°   | 147.2  | 142.6  | 138.0  | 133.4  | 128.8  |
| 82.5° | 87.4   | 87.4   | 87.4   | 87.4   | 87.4   |
| 85°   | 46.0   | 50.6   | 55.2   | 59.8   | 64.4   |
| 87.5° | 27.6   | 27.6   | 32.2   | 36.8   | 41.4   |
| 90°   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |

(END OF REPORT)