

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: P562529

Luminaire Tested: FSR-24-4-LD4-2HI-35-UNV-93-84-EDD

Issue Date: 7/20/2021

**Test Information**

Test Method: LM-79-2019  
Report Number: P562529  
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-LD4-2HI-35-UNV-93-84-EDD  
Description: 2X4 FSR TROFFER WITH .156 CLEAR TEMPERED GLASS FIXTURE SIDE AND .125 CLEAR PC ENVIRONMENTAL SIDE LENSES WITH, 80 CRI AND 3500K CCT LEDS  
Light Source: -  
Ballast/Driver: -

**Summary**

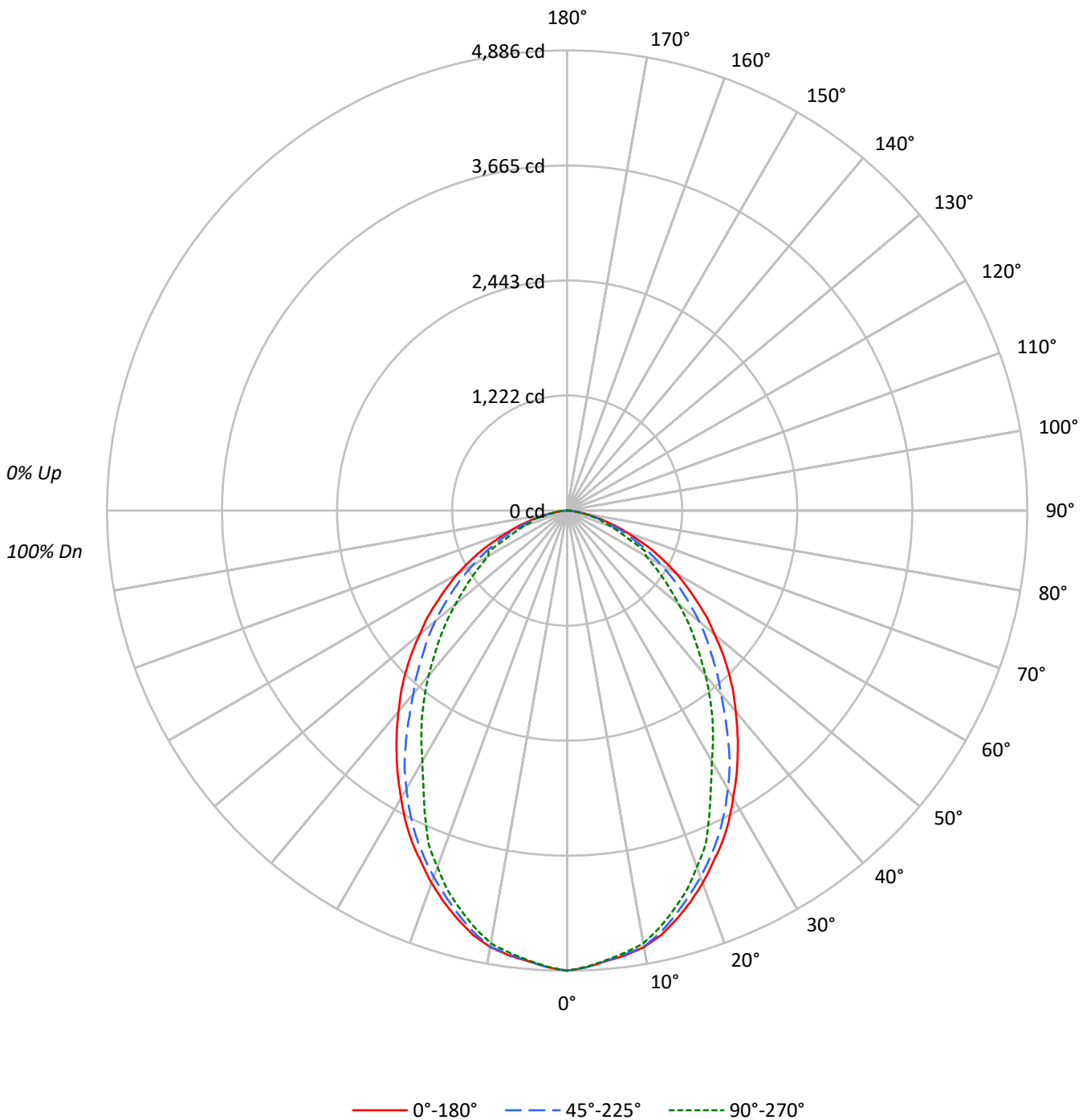
Lumens per Lamp: N/A  
Luminaire Lumens: 9592.0 lumens  
Efficiency: N/A  
Efficacy: 111.0 lumens/watt  
Spacing Criteria (0/90/45): 1.1 / 1 / 1.15  
Luminous Opening: Rectangular (W 2' x L: 4' x H: 0')  
CIE Type: Direct  
  
Input Watts (W): 86.4  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage 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°  | 6574 | 6574 | 6574 |
| 5°  | 6485 | 6477 | 6470 |
| 10° | 6429 | 6421 | 6374 |
| 15° | 6255 | 6192 | 6106 |
| 20° | 6025 | 5928 | 5767 |
| 25° | 5778 | 5652 | 5300 |
| 30° | 5476 | 5301 | 4774 |
| 35° | 5186 | 4899 | 4416 |
| 40° | 4891 | 4465 | 4018 |
| 45° | 4611 | 4127 | 3633 |
| 50° | 4268 | 3831 | 3240 |
| 55° | 3949 | 3472 | 2902 |
| 60° | 3618 | 3101 | 2599 |
| 65° | 3183 | 2715 | 2302 |
| 70° | 2622 | 2378 | 1956 |
| 75° | 2085 | 1821 | 1909 |
| 80° | 1401 | 1313 | 1226 |
| 85° | 872  | 1047 | 1221 |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 4611 cd/sqm



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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 454.8  | 4.7       |
| 10°-20°   | 1248.2 | 13.0      |
| 20°-30°   | 1728.1 | 18.0      |
| 30°-40°   | 1842.7 | 19.2      |
| 40°-50°   | 1681.0 | 17.5      |
| 50°-60°   | 1316.9 | 13.7      |
| 60°-70°   | 858.3  | 8.9       |
| 70°-80°   | 380.3  | 4.0       |
| 80°-90°   | 81.6   | 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°    | 3431.1 | 35.8      |
| 0°-40°    | 5273.8 | 55.0      |
| 0°-60°    | 8271.7 | 86.2      |
| 0°-90°    | 9592.0 | 100.0     |
| 90°-120°  | 0.0    | 0.0       |
| 90°-150°  | 0.0    | 0.0       |
| 90°-180°  | 0.0    | 0.0       |
| 0°-180°   | 9592.0 | 100.0     |

**CANDELA DISTRIBUTION:**

|     | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|-----|------|-------|------|-------|------|------|
| 0°  | 4886 | 4886  | 4886 | 4886  | 4886 |      |
| 5°  | 4801 | 4796  | 4796 | 4790  | 4790 | 456  |
| 15° | 4491 | 4491  | 4445 | 4400  | 4383 | 1262 |
| 25° | 3892 | 3869  | 3807 | 3672  | 3570 | 1787 |
| 35° | 3158 | 3135  | 2982 | 2756  | 2689 | 1974 |
| 45° | 2423 | 2372  | 2169 | 1988  | 1909 | 1867 |
| 55° | 1683 | 1632  | 1480 | 1305  | 1237 | 1510 |
| 65° | 1000 | 943   | 853  | 870   | 723  | 985  |
| 75° | 401  | 373   | 350  | 333   | 367  | 430  |
| 85° | 56   | 62    | 68   | 73    | 79   | 78   |
| 90° | 0    | 0     | 0    | 0     | 0    |      |



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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|-------|--------|--------|--------|--------|--------|
| 0°    | 4886.0 | 4886.0 | 4886.0 | 4886.0 | 4886.0 |
| 2.5°  | 4852.1 | 4852.1 | 4852.1 | 4846.5 | 4846.5 |
| 5°    | 4801.3 | 4795.7 | 4795.7 | 4790.0 | 4790.0 |
| 7.5°  | 4761.8 | 4756.1 | 4750.5 | 4744.8 | 4733.5 |
| 10°   | 4705.3 | 4705.3 | 4699.6 | 4671.4 | 4665.7 |
| 12.5° | 4614.9 | 4609.3 | 4586.7 | 4547.1 | 4535.8 |
| 15°   | 4490.6 | 4490.6 | 4445.4 | 4400.3 | 4383.3 |
| 17.5° | 4355.1 | 4349.4 | 4292.9 | 4247.7 | 4225.2 |
| 20°   | 4208.2 | 4196.9 | 4140.4 | 4067.0 | 4027.4 |
| 22.5° | 4044.4 | 4044.4 | 3976.6 | 3880.6 | 3841.0 |
| 25°   | 3891.9 | 3869.3 | 3807.2 | 3671.6 | 3569.9 |
| 27.5° | 3716.8 | 3682.9 | 3615.1 | 3423.0 | 3304.4 |
| 30°   | 3524.7 | 3507.8 | 3411.8 | 3163.2 | 3072.8 |
| 32.5° | 3344.0 | 3315.7 | 3214.1 | 2954.2 | 2880.8 |
| 35°   | 3157.6 | 3135.0 | 2982.5 | 2756.5 | 2688.7 |
| 37.5° | 2971.2 | 2942.9 | 2750.9 | 2570.1 | 2485.4 |
| 40°   | 2784.8 | 2750.9 | 2541.9 | 2378.1 | 2287.7 |
| 42.5° | 2609.7 | 2564.5 | 2361.1 | 2186.0 | 2084.3 |
| 45°   | 2423.2 | 2372.4 | 2169.1 | 1988.3 | 1909.2 |
| 47.5° | 2236.8 | 2191.7 | 2005.3 | 1818.8 | 1728.5 |
| 50°   | 2039.1 | 1999.6 | 1830.1 | 1643.7 | 1547.7 |
| 52.5° | 1875.3 | 1813.2 | 1649.4 | 1463.0 | 1383.9 |
| 55°   | 1683.3 | 1632.4 | 1479.9 | 1304.8 | 1237.0 |
| 57.5° | 1508.2 | 1457.3 | 1316.1 | 1152.3 | 1095.8 |
| 60°   | 1344.4 | 1270.9 | 1152.3 | 1011.1 | 965.9  |
| 62.5° | 1163.6 | 1107.1 | 1005.5 | 886.8  | 943.3  |
| 65°   | 999.8  | 943.3  | 852.9  | 869.9  | 723.0  |
| 67.5° | 819.0  | 790.8  | 711.7  | 632.6  | 610.0  |
| 70°   | 666.5  | 632.6  | 604.4  | 519.7  | 497.1  |
| 72.5° | 531.0  | 497.1  | 457.5  | 412.3  | 395.4  |
| 75°   | 401.1  | 372.8  | 350.2  | 333.3  | 367.2  |
| 77.5° | 276.8  | 265.5  | 248.5  | 231.6  | 225.9  |
| 80°   | 180.8  | 175.1  | 169.5  | 163.8  | 158.2  |
| 82.5° | 107.3  | 107.3  | 107.3  | 107.3  | 107.3  |
| 85°   | 56.5   | 62.1   | 67.8   | 73.4   | 79.1   |
| 87.5° | 33.9   | 33.9   | 39.5   | 45.2   | 50.8   |
| 90°   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |

(END OF REPORT)