

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: P564119

Luminaire Tested: FSR-24-4-LD4-4STD-40-UNV-82-87-EDD

Issue Date: 7/20/2021

**Test Information**

Test Method: LM-79-2019  
Report Number: P564119  
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-82-87-EDD  
Description: 2X4 FSR TROFFER WITH .187 CLEAR PC FIXTURE SIDE AND .375 CLEAR PC ENVIRONMENTAL SI  
LENSES WITH, 80 CRI AND 4000K CCT LEDS  
Light Source: -  
Ballast/Driver: -

**Summary**

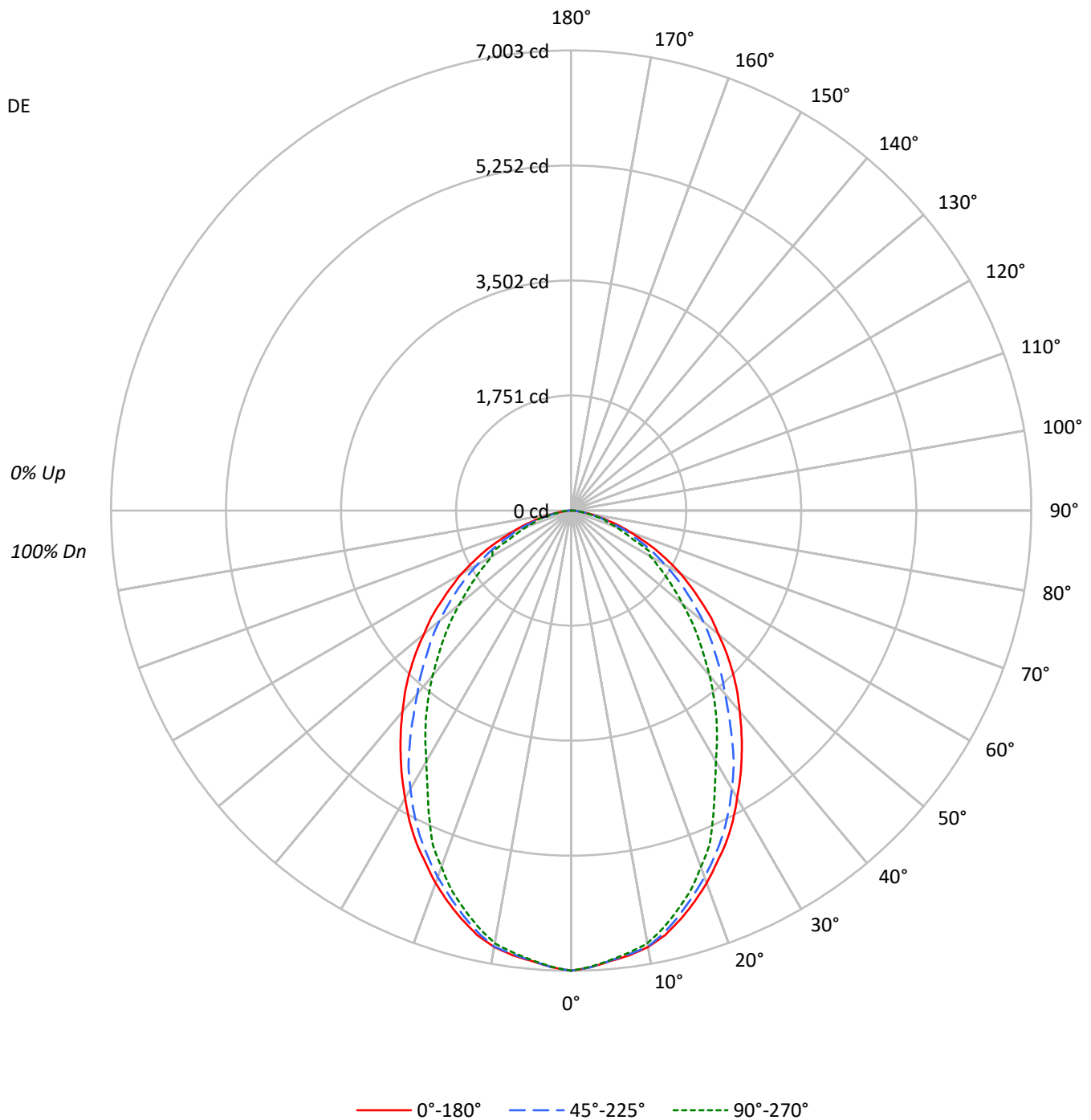
Lumens per Lamp: N/A  
Luminaire Lumens: 13748.0 lumens  
Efficiency: N/A  
Efficacy: 103.2 lumens/watt  
Spacing Criteria (0/90/45): 1.1 / 1 / 1.15  
Luminous Opening: Rectangular (W 2' x L: 4' x H: 0')  
CIE Type: Direct  
  
Input Watts (W): 133.2  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage 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 | 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°  | 9422 | 9422 | 9422 |
| 5°  | 9294 | 9284 | 9273 |
| 10° | 9214 | 9203 | 9136 |
| 15° | 8965 | 8875 | 8751 |
| 20° | 8636 | 8497 | 8265 |
| 25° | 8281 | 8101 | 7596 |
| 30° | 7849 | 7597 | 6843 |
| 35° | 7434 | 7021 | 6330 |
| 40° | 7010 | 6399 | 5759 |
| 45° | 6609 | 5916 | 5207 |
| 50° | 6118 | 5491 | 4643 |
| 55° | 5659 | 4976 | 4159 |
| 60° | 5185 | 4444 | 3725 |
| 65° | 4562 | 3892 | 3299 |
| 70° | 3758 | 3408 | 2803 |
| 75° | 2988 | 2610 | 2735 |
| 80° | 2008 | 1882 | 1757 |
| 85° | 1250 | 1501 | 1749 |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 6609 cd/sqm



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**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 651.9   | 4.7       |
| 10°-20°   | 1789.1  | 13.0      |
| 20°-30°   | 2476.8  | 18.0      |
| 30°-40°   | 2641.0  | 19.2      |
| 40°-50°   | 2409.4  | 17.5      |
| 50°-60°   | 1887.6  | 13.7      |
| 60°-70°   | 1230.2  | 8.9       |
| 70°-80°   | 545.0   | 4.0       |
| 80°-90°   | 117.0   | 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°    | 4917.8  | 35.8      |
| 0°-40°    | 7558.8  | 55.0      |
| 0°-60°    | 11855.7 | 86.2      |
| 0°-90°    | 13748.0 | 100.0     |
| 90°-120°  | 0.0     | 0.0       |
| 90°-150°  | 0.0     | 0.0       |
| 90°-180°  | 0.0     | 0.0       |
| 0°-180°   | 13748.0 | 100.0     |

**CANDELA DISTRIBUTION:**

|     | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|-----|------|-------|------|-------|------|------|
| 0°  | 7003 | 7003  | 7003 | 7003  | 7003 |      |
| 5°  | 6882 | 6874  | 6874 | 6865  | 6865 | 653  |
| 15° | 6436 | 6436  | 6372 | 6307  | 6282 | 1809 |
| 25° | 5578 | 5546  | 5457 | 5262  | 5117 | 2561 |
| 35° | 4526 | 4493  | 4275 | 3951  | 3854 | 2829 |
| 45° | 3473 | 3400  | 3109 | 2850  | 2736 | 2675 |
| 55° | 2413 | 2340  | 2121 | 1870  | 1773 | 2164 |
| 65° | 1433 | 1352  | 1222 | 1247  | 1036 | 1412 |
| 75° | 575  | 534   | 502  | 478   | 526  | 616  |
| 85° | 81   | 89    | 97   | 105   | 113  | 112  |
| 90° | 0    | 0     | 0    | 0     | 0    |      |



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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|-------|--------|--------|--------|--------|--------|
| 0°    | 7003.0 | 7003.0 | 7003.0 | 7003.0 | 7003.0 |
| 2.5°  | 6954.5 | 6954.5 | 6954.5 | 6946.4 | 6946.4 |
| 5°    | 6881.6 | 6873.5 | 6873.5 | 6865.4 | 6865.4 |
| 7.5°  | 6824.9 | 6816.8 | 6808.7 | 6800.6 | 6784.5 |
| 10°   | 6744.0 | 6744.0 | 6735.9 | 6695.4 | 6687.3 |
| 12.5° | 6614.4 | 6606.3 | 6574.0 | 6517.3 | 6501.1 |
| 15°   | 6436.3 | 6436.3 | 6371.6 | 6306.8 | 6282.5 |
| 17.5° | 6242.0 | 6233.9 | 6153.0 | 6088.2 | 6055.8 |
| 20°   | 6031.5 | 6015.3 | 5934.4 | 5829.1 | 5772.5 |
| 22.5° | 5796.7 | 5796.7 | 5699.6 | 5562.0 | 5505.3 |
| 25°   | 5578.1 | 5545.8 | 5456.7 | 5262.4 | 5116.7 |
| 27.5° | 5327.2 | 5278.6 | 5181.4 | 4906.2 | 4736.2 |
| 30°   | 5051.9 | 5027.6 | 4890.0 | 4533.8 | 4404.2 |
| 32.5° | 4792.8 | 4752.4 | 4606.6 | 4234.2 | 4129.0 |
| 35°   | 4525.7 | 4493.3 | 4274.7 | 3950.9 | 3853.7 |
| 37.5° | 4258.5 | 4218.0 | 3942.8 | 3683.7 | 3562.2 |
| 40°   | 3991.3 | 3942.8 | 3643.2 | 3408.4 | 3278.9 |
| 42.5° | 3740.4 | 3675.6 | 3384.1 | 3133.2 | 2987.4 |
| 45°   | 3473.2 | 3400.3 | 3108.9 | 2849.8 | 2736.5 |
| 47.5° | 3206.0 | 3141.3 | 2874.1 | 2606.9 | 2477.4 |
| 50°   | 2922.7 | 2866.0 | 2623.1 | 2355.9 | 2218.3 |
| 52.5° | 2687.9 | 2598.8 | 2364.0 | 2096.9 | 1983.5 |
| 55°   | 2412.6 | 2339.7 | 2121.2 | 1870.2 | 1773.0 |
| 57.5° | 2161.6 | 2088.8 | 1886.4 | 1651.6 | 1570.6 |
| 60°   | 1926.9 | 1821.6 | 1651.6 | 1449.2 | 1384.4 |
| 62.5° | 1667.8 | 1586.8 | 1441.1 | 1271.1 | 1352.0 |
| 65°   | 1433.0 | 1352.0 | 1222.5 | 1246.8 | 1036.3 |
| 67.5° | 1173.9 | 1133.4 | 1020.1 | 906.8  | 874.4  |
| 70°   | 955.3  | 906.8  | 866.3  | 744.8  | 712.4  |
| 72.5° | 761.0  | 712.4  | 655.8  | 591.0  | 566.7  |
| 75°   | 574.8  | 534.3  | 502.0  | 477.7  | 526.2  |
| 77.5° | 396.7  | 380.5  | 356.2  | 331.9  | 323.8  |
| 80°   | 259.1  | 251.0  | 242.9  | 234.8  | 226.7  |
| 82.5° | 153.8  | 153.8  | 153.8  | 153.8  | 153.8  |
| 85°   | 81.0   | 89.1   | 97.2   | 105.2  | 113.3  |
| 87.5° | 48.6   | 48.6   | 56.7   | 64.8   | 72.9   |
| 90°   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |

(END OF REPORT)