

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: P564099

Luminaire Tested: FSR-24-4-LD4-4STD-40-UNV-81-85-EDD

Issue Date: 7/20/2021

**Test Information**

Test Method: LM-79-2019  
Report Number: P564099  
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-81-85-EDD  
Description: 2X4 FSR TROFFER WITH .156 CLEAR PC FIXTURE SIDE AND .187 CLEAR PC ENVIRONMENTAL SI  
LENSES WITH, 80 CRI AND 4000K CCT LEDS  
Light Source: -  
Ballast/Driver: -

**Summary**

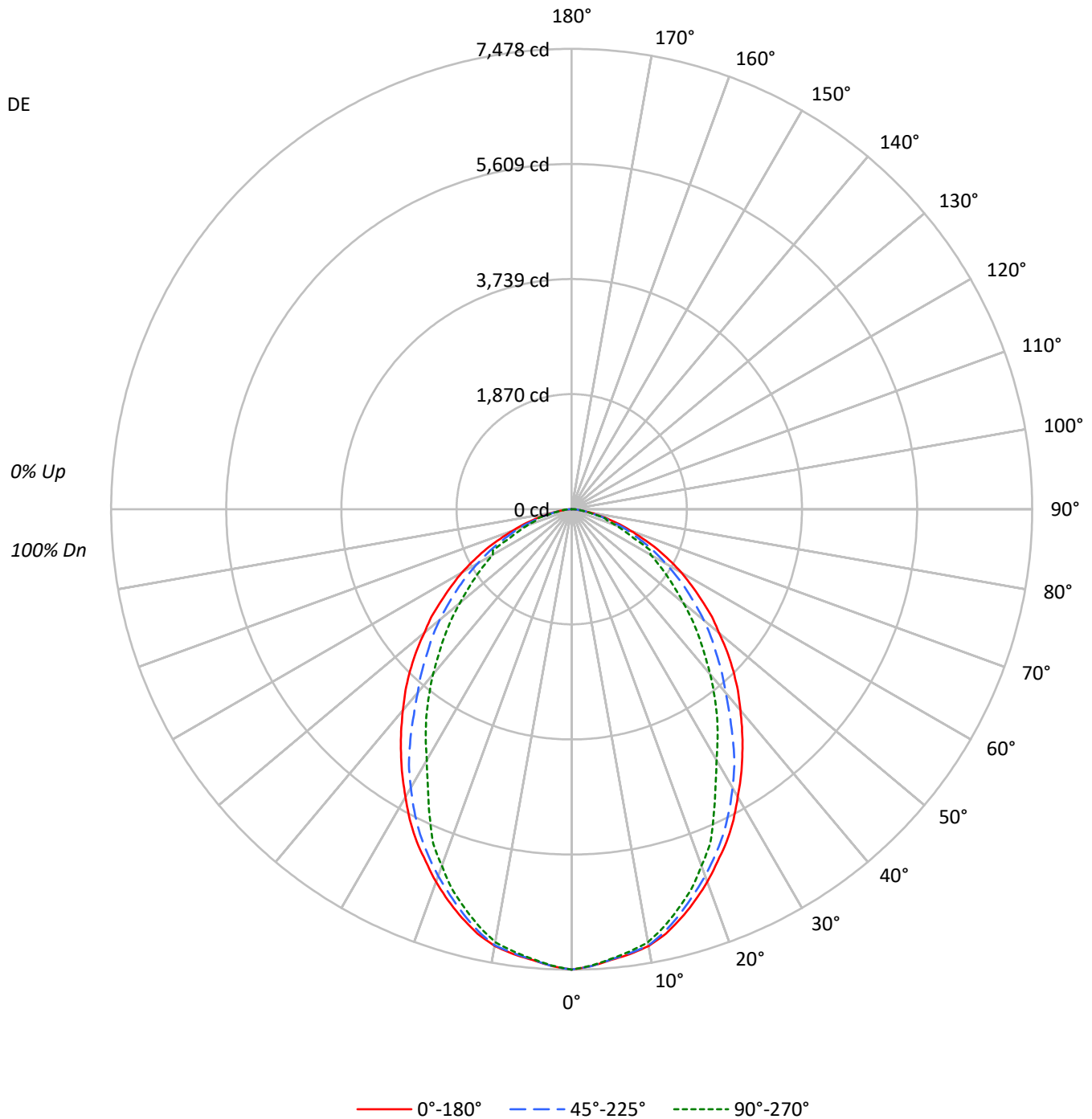
Lumens per Lamp: N/A  
Luminaire Lumens: 14680.0 lumens  
Efficiency: N/A  
Efficacy: 110.2 lumens/watt  
Spacing Criteria (0/90/45): 1.1 / 1 / 1.15  
Luminous Opening: Rectangular (W 2' x L: 4' x H: 0')  
CIE Type: Direct  
  
Input Watts (W): 133.2  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage 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  | 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°  | 10061 | 10061 | 10061 |
| 5°  | 9925  | 9913  | 9901  |
| 10° | 9839  | 9827  | 9756  |
| 15° | 9573  | 9477  | 9344  |
| 20° | 9222  | 9073  | 8826  |
| 25° | 8843  | 8650  | 8111  |
| 30° | 8381  | 8112  | 7306  |
| 35° | 7938  | 7497  | 6759  |
| 40° | 7486  | 6833  | 6150  |
| 45° | 7057  | 6317  | 5560  |
| 50° | 6532  | 5863  | 4958  |
| 55° | 6043  | 5313  | 4441  |
| 60° | 5537  | 4746  | 3978  |
| 65° | 4871  | 4156  | 3523  |
| 70° | 4013  | 3639  | 2993  |
| 75° | 3191  | 2786  | 2921  |
| 80° | 2143  | 2009  | 1876  |
| 85° | 1334  | 1601  | 1868  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 7057 cd/sqm



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**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 696.1   | 4.7       |
| 10°-20°   | 1910.3  | 13.0      |
| 20°-30°   | 2644.7  | 18.0      |
| 30°-40°   | 2820.1  | 19.2      |
| 40°-50°   | 2572.7  | 17.5      |
| 50°-60°   | 2015.5  | 13.7      |
| 60°-70°   | 1313.6  | 8.9       |
| 70°-80°   | 582.0   | 4.0       |
| 80°-90°   | 125.0   | 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°    | 5251.2  | 35.8      |
| 0°-40°    | 8071.2  | 55.0      |
| 0°-60°    | 12659.4 | 86.2      |
| 0°-90°    | 14680.0 | 100.0     |
| 90°-120°  | 0.0     | 0.0       |
| 90°-150°  | 0.0     | 0.0       |
| 90°-180°  | 0.0     | 0.0       |
| 0°-180°   | 14680.0 | 100.0     |

**CANDELA DISTRIBUTION:**

|     | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|-----|------|-------|------|-------|------|------|
| 0°  | 7478 | 7478  | 7478 | 7478  | 7478 |      |
| 5°  | 7348 | 7340  | 7340 | 7331  | 7331 | 698  |
| 15° | 6873 | 6873  | 6804 | 6734  | 6708 | 1932 |
| 25° | 5956 | 5922  | 5827 | 5619  | 5464 | 2735 |
| 35° | 4832 | 4798  | 4564 | 4219  | 4115 | 3021 |
| 45° | 3709 | 3631  | 3320 | 3043  | 2922 | 2857 |
| 55° | 2576 | 2498  | 2265 | 1997  | 1893 | 2311 |
| 65° | 1530 | 1444  | 1305 | 1331  | 1106 | 1508 |
| 75° | 614  | 571   | 536  | 510   | 562  | 658  |
| 85° | 86   | 95    | 104  | 112   | 121  | 120  |
| 90° | 0    | 0     | 0    | 0     | 0    |      |



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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|-------|--------|--------|--------|--------|--------|
| 0°    | 7477.8 | 7477.8 | 7477.8 | 7477.8 | 7477.8 |
| 2.5°  | 7425.9 | 7425.9 | 7425.9 | 7417.3 | 7417.3 |
| 5°    | 7348.1 | 7339.5 | 7339.5 | 7330.8 | 7330.8 |
| 7.5°  | 7287.6 | 7279.0 | 7270.3 | 7261.7 | 7244.4 |
| 10°   | 7201.2 | 7201.2 | 7192.5 | 7149.3 | 7140.6 |
| 12.5° | 7062.8 | 7054.2 | 7019.6 | 6959.1 | 6941.8 |
| 15°   | 6872.7 | 6872.7 | 6803.5 | 6734.3 | 6708.4 |
| 17.5° | 6665.2 | 6656.5 | 6570.1 | 6500.9 | 6466.3 |
| 20°   | 6440.4 | 6423.1 | 6336.7 | 6224.3 | 6163.8 |
| 22.5° | 6189.7 | 6189.7 | 6086.0 | 5939.0 | 5878.5 |
| 25°   | 5956.3 | 5921.7 | 5826.6 | 5619.2 | 5463.5 |
| 27.5° | 5688.3 | 5636.4 | 5532.7 | 5238.8 | 5057.2 |
| 30°   | 5394.4 | 5368.5 | 5221.5 | 4841.1 | 4702.8 |
| 32.5° | 5117.8 | 5074.5 | 4918.9 | 4521.3 | 4408.9 |
| 35°   | 4832.5 | 4797.9 | 4564.5 | 4218.7 | 4114.9 |
| 37.5° | 4547.2 | 4504.0 | 4210.0 | 3933.4 | 3803.7 |
| 40°   | 4261.9 | 4210.0 | 3890.2 | 3639.5 | 3501.2 |
| 42.5° | 3993.9 | 3924.8 | 3613.5 | 3345.6 | 3189.9 |
| 45°   | 3708.6 | 3630.8 | 3319.6 | 3043.0 | 2922.0 |
| 47.5° | 3423.4 | 3354.2 | 3068.9 | 2783.6 | 2645.3 |
| 50°   | 3120.8 | 3060.3 | 2800.9 | 2515.7 | 2368.7 |
| 52.5° | 2870.1 | 2775.0 | 2524.3 | 2239.0 | 2118.0 |
| 55°   | 2576.2 | 2498.4 | 2265.0 | 1997.0 | 1893.2 |
| 57.5° | 2308.2 | 2230.4 | 2014.3 | 1763.5 | 1677.1 |
| 60°   | 2057.5 | 1945.1 | 1763.5 | 1547.4 | 1478.3 |
| 62.5° | 1780.8 | 1694.4 | 1538.8 | 1357.2 | 1443.7 |
| 65°   | 1530.1 | 1443.7 | 1305.4 | 1331.3 | 1106.5 |
| 67.5° | 1253.5 | 1210.3 | 1089.3 | 968.2  | 933.6  |
| 70°   | 1020.1 | 968.2  | 925.0  | 795.3  | 760.7  |
| 72.5° | 812.6  | 760.7  | 700.2  | 631.1  | 605.1  |
| 75°   | 613.8  | 570.6  | 536.0  | 510.0  | 561.9  |
| 77.5° | 423.6  | 406.3  | 380.4  | 354.4  | 345.8  |
| 80°   | 276.6  | 268.0  | 259.3  | 250.7  | 242.1  |
| 82.5° | 164.3  | 164.3  | 164.3  | 164.3  | 164.3  |
| 85°   | 86.4   | 95.1   | 103.7  | 112.4  | 121.0  |
| 87.5° | 51.9   | 51.9   | 60.5   | 69.2   | 77.8   |
| 90°   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |

(END OF REPORT)