

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: P563481

Luminaire Tested: FSR-24-4-LD4-3STD-35-UNV-82-88-EDD

Issue Date: 7/20/2021

**Test Information**

Test Method: LM-79-2019  
Report Number: P563481  
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-LD4-3STD-35-UNV-82-88-EDD  
Description: 2X4 FSR TROFFER WITH .187 CLEAR PC FIXTURE SIDE AND .500 CLEAR PC ENVIRONMENTAL SI  
LENSES WITH, 80 CRI AND 3500K CCT LEDS  
Light Source: -  
Ballast/Driver: -

**Summary**

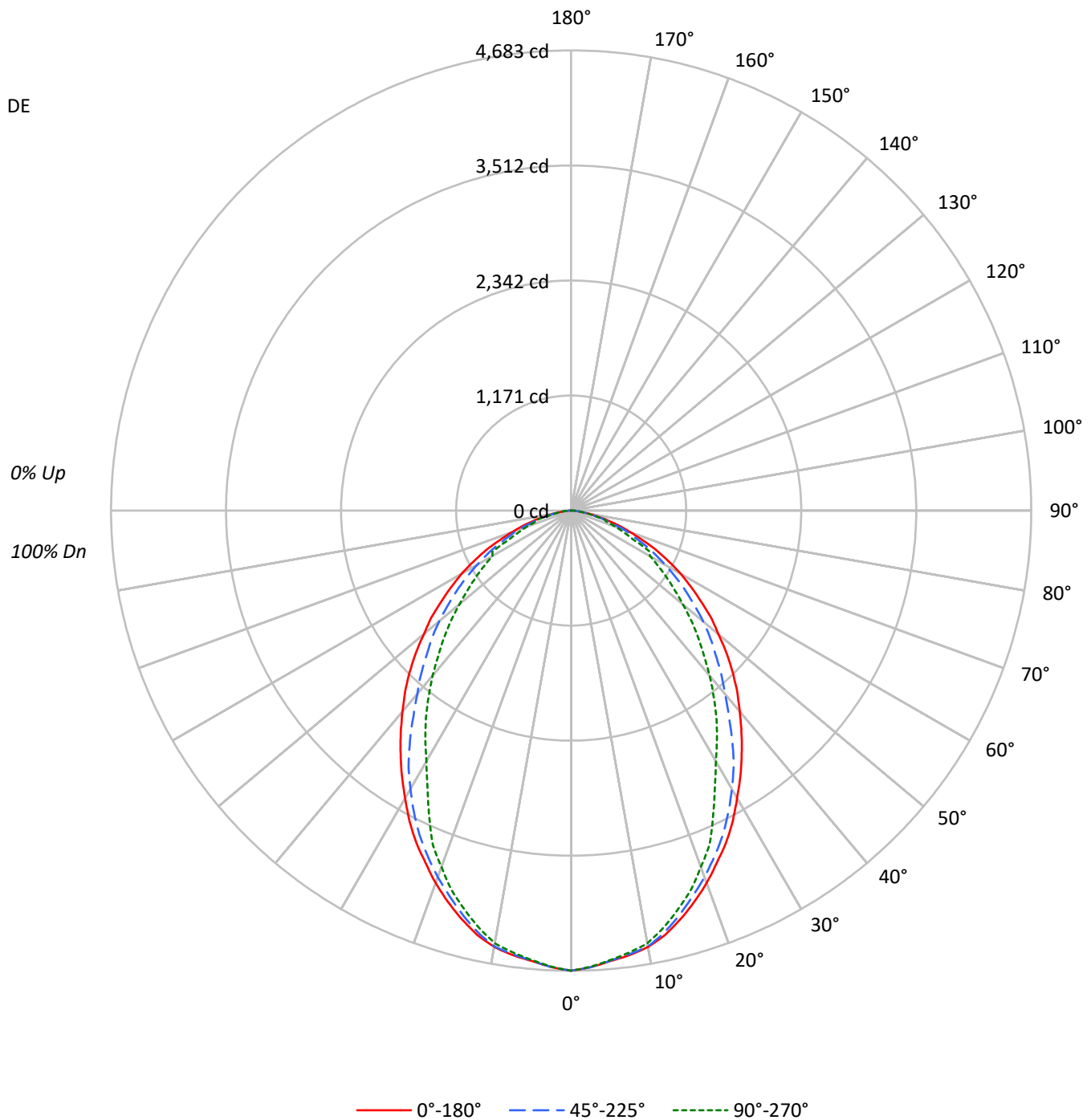
Lumens per Lamp: N/A  
Luminaire Lumens: 9193.0 lumens  
Efficiency: N/A  
Efficacy: 92.0 lumens/watt  
Spacing Criteria (0/90/45): 1.1 / 1 / 1.15  
Luminous Opening: Rectangular (W 2' x L: 4' x H: 0')  
CIE Type: Direct  
  
Input Watts (W): 99.9  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage 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



TEST NUMBER: P563481

CATALOG NUMBER: FSR-24-4-LD4-3STD-35-UNV-82-88-EDD

### Luminous Intensity Polar Plot





TEST NUMBER: P563481

CATALOG NUMBER: FSR-24-4-LD4-3STD-35-UNV-82-88-EDD

**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°  | 6301 | 6301 | 6301 |
| 5°  | 6215 | 6208 | 6200 |
| 10° | 6161 | 6154 | 6109 |
| 15° | 5995 | 5935 | 5852 |
| 20° | 5775 | 5682 | 5527 |
| 25° | 5537 | 5417 | 5079 |
| 30° | 5248 | 5080 | 4575 |
| 35° | 4971 | 4695 | 4233 |
| 40° | 4688 | 4279 | 3851 |
| 45° | 4419 | 3956 | 3482 |
| 50° | 4091 | 3671 | 3105 |
| 55° | 3784 | 3327 | 2781 |
| 60° | 3467 | 2972 | 2491 |
| 65° | 3051 | 2603 | 2206 |
| 70° | 2513 | 2279 | 1874 |
| 75° | 1998 | 1745 | 1829 |
| 80° | 1342 | 1258 | 1175 |
| 85° | 835  | 1003 | 1170 |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 4419 cd/sqm



TEST NUMBER: P563481

CATALOG NUMBER: FSR-24-4-LD4-3STD-35-UNV-82-88-EDD

**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 435.9  | 4.7       |
| 10°-20°   | 1196.3 | 13.0      |
| 20°-30°   | 1656.2 | 18.0      |
| 30°-40°   | 1766.0 | 19.2      |
| 40°-50°   | 1611.1 | 17.5      |
| 50°-60°   | 1262.2 | 13.7      |
| 60°-70°   | 822.6  | 8.9       |
| 70°-80°   | 364.5  | 4.0       |
| 80°-90°   | 78.3   | 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°    | 3288.4 | 35.8      |
| 0°-40°    | 5054.4 | 55.0      |
| 0°-60°    | 7927.7 | 86.2      |
| 0°-90°    | 9193.0 | 100.0     |
| 90°-120°  | 0.0    | 0.0       |
| 90°-150°  | 0.0    | 0.0       |
| 90°-180°  | 0.0    | 0.0       |
| 0°-180°   | 9193.0 | 100.0     |

**CANDELA DISTRIBUTION:**

|     | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|-----|------|-------|------|-------|------|------|
| 0°  | 4683 | 4683  | 4683 | 4683  | 4683 |      |
| 5°  | 4602 | 4596  | 4596 | 4591  | 4591 | 437  |
| 15° | 4304 | 4304  | 4260 | 4217  | 4201 | 1210 |
| 25° | 3730 | 3708  | 3649 | 3519  | 3421 | 1712 |
| 35° | 3026 | 3005  | 2858 | 2642  | 2577 | 1892 |
| 45° | 2322 | 2274  | 2079 | 1906  | 1830 | 1789 |
| 55° | 1613 | 1564  | 1418 | 1250  | 1186 | 1447 |
| 65° | 958  | 904   | 818  | 834   | 693  | 944  |
| 75° | 384  | 357   | 336  | 319   | 352  | 412  |
| 85° | 54   | 60    | 65   | 70    | 76   | 75   |
| 90° | 0    | 0     | 0    | 0     | 0    |      |



TEST NUMBER: P563481

CATALOG NUMBER: FSR-24-4-LD4-3STD-35-UNV-82-88-EDD

**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|-------|--------|--------|--------|--------|--------|
| 0°    | 4682.8 | 4682.8 | 4682.8 | 4682.8 | 4682.8 |
| 2.5°  | 4650.3 | 4650.3 | 4650.3 | 4644.9 | 4644.9 |
| 5°    | 4601.6 | 4596.2 | 4596.2 | 4590.8 | 4590.8 |
| 7.5°  | 4563.7 | 4558.3 | 4552.9 | 4547.5 | 4536.6 |
| 10°   | 4509.6 | 4509.6 | 4504.1 | 4477.1 | 4471.7 |
| 12.5° | 4422.9 | 4417.5 | 4395.9 | 4358.0 | 4347.1 |
| 15°   | 4303.8 | 4303.8 | 4260.5 | 4217.2 | 4201.0 |
| 17.5° | 4173.9 | 4168.5 | 4114.4 | 4071.1 | 4049.4 |
| 20°   | 4033.2 | 4022.3 | 3968.2 | 3897.8 | 3859.9 |
| 22.5° | 3876.2 | 3876.2 | 3811.2 | 3719.2 | 3681.3 |
| 25°   | 3730.0 | 3708.3 | 3648.8 | 3518.9 | 3421.4 |
| 27.5° | 3562.2 | 3529.7 | 3464.7 | 3280.7 | 3167.0 |
| 30°   | 3378.1 | 3361.9 | 3269.8 | 3031.6 | 2945.0 |
| 32.5° | 3204.9 | 3177.8 | 3080.4 | 2831.3 | 2761.0 |
| 35°   | 3026.2 | 3004.6 | 2858.4 | 2641.9 | 2576.9 |
| 37.5° | 2847.6 | 2820.5 | 2636.4 | 2463.2 | 2382.0 |
| 40°   | 2668.9 | 2636.4 | 2436.1 | 2279.1 | 2192.5 |
| 42.5° | 2501.1 | 2457.8 | 2262.9 | 2095.1 | 1997.6 |
| 45°   | 2322.4 | 2273.7 | 2078.8 | 1905.6 | 1829.8 |
| 47.5° | 2143.8 | 2100.5 | 1921.8 | 1743.2 | 1656.6 |
| 50°   | 1954.3 | 1916.4 | 1754.0 | 1575.4 | 1483.3 |
| 52.5° | 1797.3 | 1737.8 | 1580.8 | 1402.1 | 1326.3 |
| 55°   | 1613.3 | 1564.5 | 1418.4 | 1250.5 | 1185.6 |
| 57.5° | 1445.4 | 1396.7 | 1261.4 | 1104.4 | 1050.2 |
| 60°   | 1288.4 | 1218.1 | 1104.4 | 969.0  | 925.7  |
| 62.5° | 1115.2 | 1061.1 | 963.6  | 849.9  | 904.1  |
| 65°   | 958.2  | 904.1  | 817.5  | 833.7  | 692.9  |
| 67.5° | 785.0  | 757.9  | 682.1  | 606.3  | 584.7  |
| 70°   | 638.8  | 606.3  | 579.3  | 498.1  | 476.4  |
| 72.5° | 508.9  | 476.4  | 438.5  | 395.2  | 379.0  |
| 75°   | 384.4  | 357.3  | 335.6  | 319.4  | 351.9  |
| 77.5° | 265.3  | 254.4  | 238.2  | 222.0  | 216.5  |
| 80°   | 173.2  | 167.8  | 162.4  | 157.0  | 151.6  |
| 82.5° | 102.9  | 102.9  | 102.9  | 102.9  | 102.9  |
| 85°   | 54.1   | 59.5   | 65.0   | 70.4   | 75.8   |
| 87.5° | 32.5   | 32.5   | 37.9   | 43.3   | 48.7   |
| 90°   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |

(END OF REPORT)