

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: P563464

Luminaire Tested: FSR-24-4-LD4-3STD-35-UNV-81-88-EDD-90

Issue Date: 7/20/2021

**Test Information**

Test Method: LM-79-2019  
Report Number: P563464  
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-81-88-EDD-90  
Description: 2X4 FSR TROFFER WITH .156 CLEAR PC FIXTURE SIDE AND .500 CLEAR PC ENVIRONMENTAL SI  
LENSES WITH, 90 CRI AND 3500K CCT LEDS  
Light Source: -  
Ballast/Driver: -

**Summary**

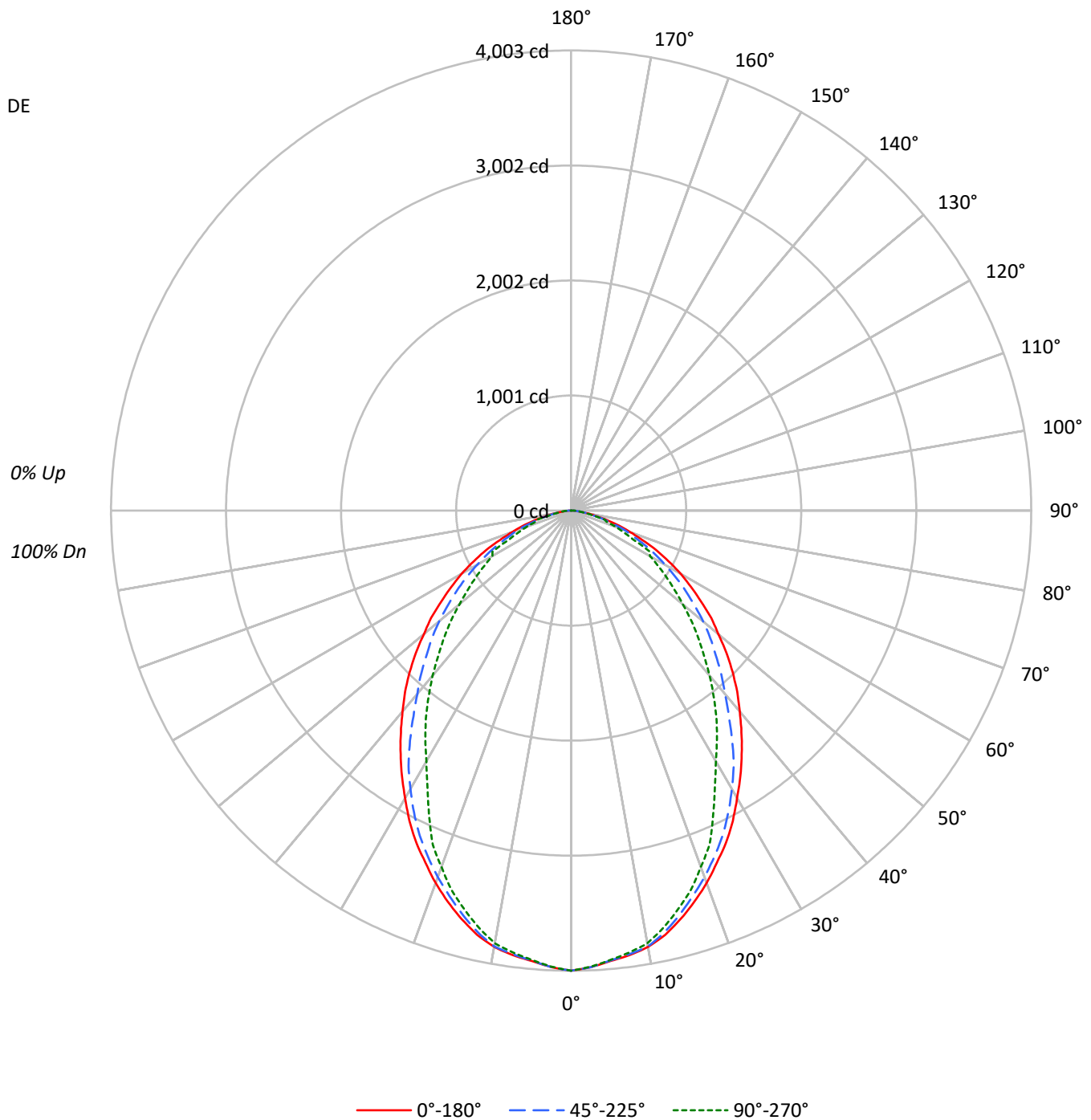
Lumens per Lamp: N/A  
Luminaire Lumens: 7858.0 lumens  
Efficiency: N/A  
Efficacy: 78.7 lumens/watt  
Spacing Criteria (0/90/45): 1.1 / 1 / 1.15  
Luminous Opening: Rectangular (W 2' x L: 4' x H: 0')  
CIE Type: Direct  
  
Input Watts (W): 99.9  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage 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



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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 |    |    |    |    |    |    |    |    | 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°  | 5386 | 5386 | 5386 |
| 5°  | 5312 | 5306 | 5300 |
| 10° | 5266 | 5260 | 5222 |
| 15° | 5124 | 5073 | 5002 |
| 20° | 4936 | 4857 | 4724 |
| 25° | 4733 | 4630 | 4342 |
| 30° | 4486 | 4342 | 3911 |
| 35° | 4249 | 4013 | 3618 |
| 40° | 4007 | 3658 | 3292 |
| 45° | 3777 | 3381 | 2976 |
| 50° | 3497 | 3138 | 2654 |
| 55° | 3235 | 2844 | 2377 |
| 60° | 2964 | 2540 | 2129 |
| 65° | 2608 | 2224 | 1886 |
| 70° | 2148 | 1948 | 1602 |
| 75° | 1708 | 1491 | 1564 |
| 80° | 1148 | 1075 | 1004 |
| 85° | 715  | 857  | 1000 |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 3777 cd/sqm



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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 372.6  | 4.7       |
| 10°-20°   | 1022.6 | 13.0      |
| 20°-30°   | 1415.7 | 18.0      |
| 30°-40°   | 1509.5 | 19.2      |
| 40°-50°   | 1377.1 | 17.5      |
| 50°-60°   | 1078.9 | 13.7      |
| 60°-70°   | 703.2  | 8.9       |
| 70°-80°   | 311.5  | 4.0       |
| 80°-90°   | 66.9   | 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°    | 2810.9 | 35.8      |
| 0°-40°    | 4320.4 | 55.0      |
| 0°-60°    | 6776.4 | 86.2      |
| 0°-90°    | 7858.0 | 100.0     |
| 90°-120°  | 0.0    | 0.0       |
| 90°-150°  | 0.0    | 0.0       |
| 90°-180°  | 0.0    | 0.0       |
| 0°-180°   | 7858.0 | 100.0     |

**CANDELA DISTRIBUTION:**

|     | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|-----|------|-------|------|-------|------|------|
| 0°  | 4003 | 4003  | 4003 | 4003  | 4003 |      |
| 5°  | 3933 | 3929  | 3929 | 3924  | 3924 | 373  |
| 15° | 3679 | 3679  | 3642 | 3605  | 3591 | 1034 |
| 25° | 3188 | 3170  | 3119 | 3008  | 2925 | 1464 |
| 35° | 2587 | 2568  | 2443 | 2258  | 2203 | 1617 |
| 45° | 1985 | 1944  | 1777 | 1629  | 1564 | 1529 |
| 55° | 1379 | 1337  | 1212 | 1069  | 1013 | 1237 |
| 65° | 819  | 773   | 699  | 713   | 592  | 807  |
| 75° | 329  | 305   | 287  | 273   | 301  | 352  |
| 85° | 46   | 51    | 56   | 60    | 65   | 64   |
| 90° | 0    | 0     | 0    | 0     | 0    |      |



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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|-------|--------|--------|--------|--------|--------|
| 0°    | 4002.8 | 4002.8 | 4002.8 | 4002.8 | 4002.8 |
| 2.5°  | 3975.0 | 3975.0 | 3975.0 | 3970.4 | 3970.4 |
| 5°    | 3933.3 | 3928.7 | 3928.7 | 3924.1 | 3924.1 |
| 7.5°  | 3901.0 | 3896.3 | 3891.7 | 3887.1 | 3877.8 |
| 10°   | 3854.7 | 3854.7 | 3850.1 | 3826.9 | 3822.3 |
| 12.5° | 3780.6 | 3776.0 | 3757.5 | 3725.1 | 3715.9 |
| 15°   | 3678.8 | 3678.8 | 3641.8 | 3604.8 | 3590.9 |
| 17.5° | 3567.8 | 3563.2 | 3516.9 | 3479.9 | 3461.3 |
| 20°   | 3447.5 | 3438.2 | 3391.9 | 3331.8 | 3299.4 |
| 22.5° | 3313.3 | 3313.3 | 3257.7 | 3179.1 | 3146.7 |
| 25°   | 3188.3 | 3169.8 | 3118.9 | 3007.9 | 2924.6 |
| 27.5° | 3044.9 | 3017.1 | 2961.6 | 2804.2 | 2707.1 |
| 30°   | 2887.5 | 2873.7 | 2795.0 | 2591.4 | 2517.3 |
| 32.5° | 2739.5 | 2716.3 | 2633.0 | 2420.2 | 2360.0 |
| 35°   | 2586.8 | 2568.2 | 2443.3 | 2258.2 | 2202.7 |
| 37.5° | 2434.0 | 2410.9 | 2253.6 | 2105.5 | 2036.1 |
| 40°   | 2281.3 | 2253.6 | 2082.4 | 1948.2 | 1874.1 |
| 42.5° | 2137.9 | 2100.9 | 1934.3 | 1790.8 | 1707.5 |
| 45°   | 1985.2 | 1943.5 | 1776.9 | 1628.9 | 1564.1 |
| 47.5° | 1832.5 | 1795.5 | 1642.8 | 1490.0 | 1416.0 |
| 50°   | 1670.5 | 1638.1 | 1499.3 | 1346.6 | 1267.9 |
| 52.5° | 1536.3 | 1485.4 | 1351.2 | 1198.5 | 1133.7 |
| 55°   | 1379.0 | 1337.3 | 1212.4 | 1068.9 | 1013.4 |
| 57.5° | 1235.5 | 1193.9 | 1078.2 | 944.0  | 897.7  |
| 60°   | 1101.3 | 1041.2 | 944.0  | 828.3  | 791.3  |
| 62.5° | 953.3  | 907.0  | 823.7  | 726.5  | 772.8  |
| 65°   | 819.1  | 772.8  | 698.7  | 712.6  | 592.3  |
| 67.5° | 671.0  | 647.8  | 583.1  | 518.3  | 499.8  |
| 70°   | 546.0  | 518.3  | 495.1  | 425.7  | 407.2  |
| 72.5° | 435.0  | 407.2  | 374.8  | 337.8  | 323.9  |
| 75°   | 328.6  | 305.4  | 286.9  | 273.0  | 300.8  |
| 77.5° | 226.7  | 217.5  | 203.6  | 189.7  | 185.1  |
| 80°   | 148.1  | 143.5  | 138.8  | 134.2  | 129.6  |
| 82.5° | 87.9   | 87.9   | 87.9   | 87.9   | 87.9   |
| 85°   | 46.3   | 50.9   | 55.5   | 60.2   | 64.8   |
| 87.5° | 27.8   | 27.8   | 32.4   | 37.0   | 41.6   |
| 90°   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |

(END OF REPORT)