

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: P563599

Luminaire Tested: FSR-24-4-LD4-3STD-50-UNV-81-97-EDD

Issue Date: 7/20/2021

**Test Information**

Test Method: LM-79-2019  
Report Number: P563599  
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-50-UNV-81-97-EDD  
Description: 2X4 FSR TROFFER WITH .156 CLEAR PC FIXTURE SIDE AND .375 CLEAR TEMPERED GLASS ENVIRONMENTAL SIDE LENSES WITH, 80 CRI AND 5000K CCT LEDS  
Light Source: -  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 10917.0 lumens  
Efficiency: N/A  
Efficacy: 109.3 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

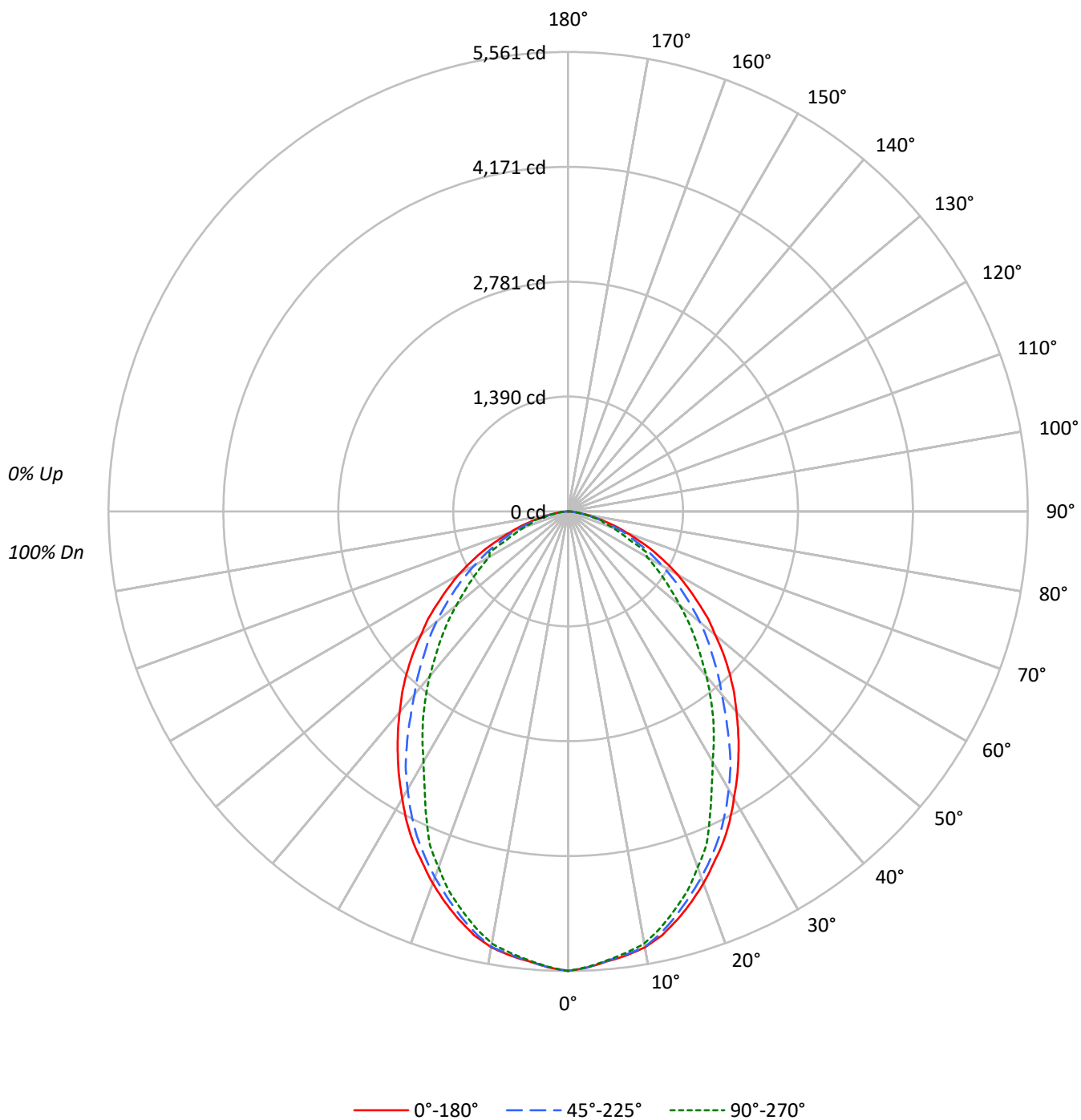
Input Watts (W): 99.9  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT



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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  |     |  |  |
| 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°  | 7482 | 7482 | 7482 |
| 5°  | 7381 | 7372 | 7363 |
| 10° | 7317 | 7308 | 7255 |
| 15° | 7119 | 7048 | 6949 |
| 20° | 6858 | 6747 | 6563 |
| 25° | 6576 | 6433 | 6032 |
| 30° | 6233 | 6033 | 5434 |
| 35° | 5903 | 5575 | 5026 |
| 40° | 5567 | 5081 | 4573 |
| 45° | 5248 | 4697 | 4135 |
| 50° | 4858 | 4360 | 3687 |
| 55° | 4494 | 3951 | 3303 |
| 60° | 4117 | 3529 | 2958 |
| 65° | 3623 | 3091 | 2620 |
| 70° | 2984 | 2706 | 2225 |
| 75° | 2373 | 2072 | 2172 |
| 80° | 1594 | 1495 | 1395 |
| 85° | 993  | 1190 | 1389 |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle:  $0^\circ$ 

Vertical Angle:  $45^\circ$

Luminance: 5248 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 517.7   | 4.7       |
| 10°-20°   | 1420.7  | 13.0      |
| 20°-30°   | 1966.8  | 18.0      |
| 30°-40°   | 2097.2  | 19.2      |
| 40°-50°   | 1913.2  | 17.5      |
| 50°-60°   | 1498.9  | 13.7      |
| 60°-70°   | 976.9   | 8.9       |
| 70°-80°   | 432.8   | 4.0       |
| 80°-90°   | 92.9    | 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°    | 3905.1  | 35.8      |
| 0°-40°    | 6002.3  | 55.0      |
| 0°-60°    | 9414.4  | 86.2      |
| 0°-90°    | 10917.0 | 100.0     |
| 90°-120°  | 0.0     | 0.0       |
| 90°-150°  | 0.0     | 0.0       |
| 90°-180°  | 0.0     | 0.0       |
| 0°-180°   | 10917.0 | 100.0     |

**CANDELA DISTRIBUTION:**

|     | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|-----|------|-------|------|-------|------|------|
| 0°  | 5561 | 5561  | 5561 | 5561  | 5561 |      |
| 5°  | 5464 | 5458  | 5458 | 5452  | 5452 | 519  |
| 15° | 5111 | 5111  | 5060 | 5008  | 4989 | 1437 |
| 25° | 4430 | 4404  | 4333 | 4179  | 4063 | 2034 |
| 35° | 3594 | 3568  | 3394 | 3137  | 3060 | 2247 |
| 45° | 2758 | 2700  | 2469 | 2263  | 2173 | 2124 |
| 55° | 1916 | 1858  | 1684 | 1485  | 1408 | 1718 |
| 65° | 1138 | 1074  | 971  | 990   | 823  | 1121 |
| 75° | 456  | 424   | 399  | 379   | 418  | 489  |
| 85° | 64   | 71    | 77   | 84    | 90   | 89   |
| 90° | 0    | 0     | 0    | 0     | 0    |      |

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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|-------|--------|--------|--------|--------|--------|
| 0°    | 5561.0 | 5561.0 | 5561.0 | 5561.0 | 5561.0 |
| 2.5°  | 5522.4 | 5522.4 | 5522.4 | 5516.0 | 5516.0 |
| 5°    | 5464.5 | 5458.1 | 5458.1 | 5451.7 | 5451.7 |
| 7.5°  | 5419.5 | 5413.1 | 5406.7 | 5400.3 | 5387.4 |
| 10°   | 5355.3 | 5355.3 | 5348.8 | 5316.7 | 5310.2 |
| 12.5° | 5252.4 | 5246.0 | 5220.2 | 5175.2 | 5162.4 |
| 15°   | 5111.0 | 5111.0 | 5059.5 | 5008.1 | 4988.8 |
| 17.5° | 4956.7 | 4950.2 | 4885.9 | 4834.5 | 4808.8 |
| 20°   | 4789.5 | 4776.7 | 4712.4 | 4628.8 | 4583.8 |
| 22.5° | 4603.1 | 4603.1 | 4525.9 | 4416.6 | 4371.6 |
| 25°   | 4429.5 | 4403.8 | 4333.1 | 4178.8 | 4063.0 |
| 27.5° | 4230.2 | 4191.6 | 4114.5 | 3895.9 | 3760.9 |
| 30°   | 4011.6 | 3992.3 | 3883.0 | 3600.2 | 3497.3 |
| 32.5° | 3805.9 | 3773.7 | 3658.0 | 3362.3 | 3278.7 |
| 35°   | 3593.7 | 3568.0 | 3394.4 | 3137.3 | 3060.1 |
| 37.5° | 3381.6 | 3349.4 | 3130.9 | 2925.1 | 2828.7 |
| 40°   | 3169.4 | 3130.9 | 2893.0 | 2706.6 | 2603.7 |
| 42.5° | 2970.1 | 2918.7 | 2687.3 | 2488.0 | 2372.3 |
| 45°   | 2758.0 | 2700.1 | 2468.7 | 2263.0 | 2173.0 |
| 47.5° | 2545.8 | 2494.4 | 2282.2 | 2070.1 | 1967.2 |
| 50°   | 2320.8 | 2275.8 | 2083.0 | 1870.8 | 1761.5 |
| 52.5° | 2134.4 | 2063.7 | 1877.2 | 1665.1 | 1575.1 |
| 55°   | 1915.8 | 1857.9 | 1684.4 | 1485.1 | 1407.9 |
| 57.5° | 1716.5 | 1658.6 | 1497.9 | 1311.5 | 1247.2 |
| 60°   | 1530.1 | 1446.5 | 1311.5 | 1150.8 | 1099.3 |
| 62.5° | 1324.3 | 1260.1 | 1144.3 | 1009.3 | 1073.6 |
| 65°   | 1137.9 | 1073.6 | 970.8  | 990.0  | 822.9  |
| 67.5° | 932.2  | 900.0  | 810.0  | 720.0  | 694.3  |
| 70°   | 758.6  | 720.0  | 687.9  | 591.5  | 565.7  |
| 72.5° | 604.3  | 565.7  | 520.7  | 469.3  | 450.0  |
| 75°   | 456.4  | 424.3  | 398.6  | 379.3  | 417.9  |
| 77.5° | 315.0  | 302.2  | 282.9  | 263.6  | 257.2  |
| 80°   | 205.7  | 199.3  | 192.9  | 186.4  | 180.0  |
| 82.5° | 122.1  | 122.1  | 122.1  | 122.1  | 122.1  |
| 85°   | 64.3   | 70.7   | 77.1   | 83.6   | 90.0   |
| 87.5° | 38.6   | 38.6   | 45.0   | 51.4   | 57.9   |
| 90°   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |

(END OF REPORT)