

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: P564059

Luminaire Tested: FSR-24-4-LD4-4STD-35-UNV-82-94-EDD

Issue Date: 7/20/2021

**Test Information**

Test Method: LM-79-2019  
Report Number: P564059  
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-35-UNV-82-94-EDD  
Description: 2X4 FSR TROFFER WITH .187 CLEAR PC FIXTURE SIDE AND .187 CLEAR TEMPERED GLASS ENVIRONMENTAL SIDE LENSES WITH, 80 CRI AND 3500K CCT LEDS  
Light Source: -  
Ballast/Driver: -

**Summary**

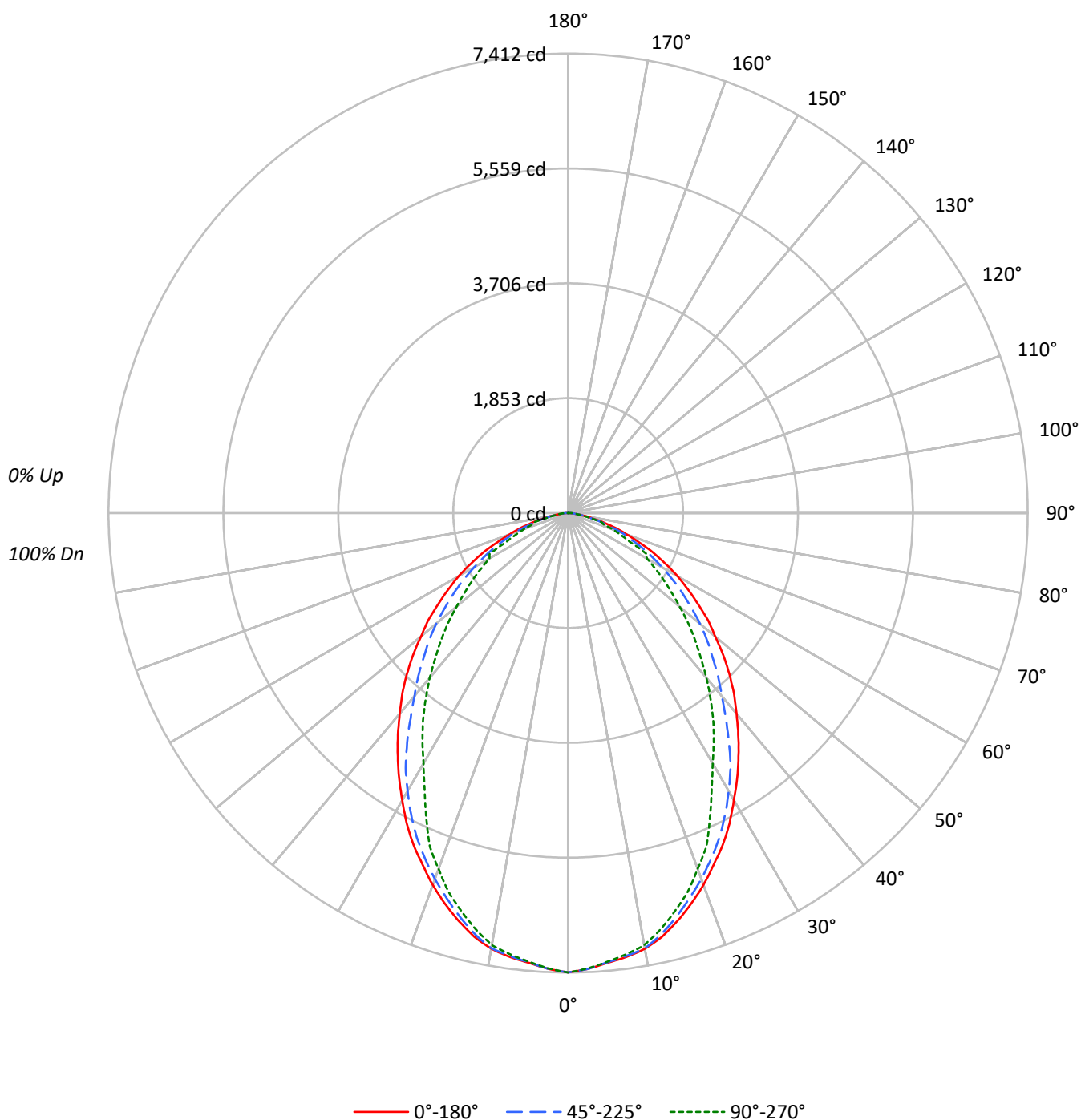
Lumens per Lamp: N/A  
Luminaire Lumens: 14550.0 lumens  
Efficiency: N/A  
Efficacy: 109.2 lumens/watt  
Spacing Criteria (0/90/45): 1.1 / 1 / 1.15  
Luminous Opening: Rectangular (W 2' x L: 4' x H: 0')  
CIE Type: Direct  
  
Input Watts (W): 133.2  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage 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  |     |     |     |    | 0  |
| RW  | 70  | 50  | 30  | 10  | 70  | 50  | 30  | 10  | 50  | 30  | 10  | 50  | 30  | 10  | 50  | 30  | 10  | 50  | 30 | 10 |
| 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°  | 9972 | 9972 | 9972 |
| 5°  | 9837 | 9825 | 9814 |
| 10° | 9751 | 9740 | 9669 |
| 15° | 9489 | 9393 | 9262 |
| 20° | 9140 | 8993 | 8747 |
| 25° | 8764 | 8573 | 8039 |
| 30° | 8307 | 8041 | 7242 |
| 35° | 7867 | 7431 | 6699 |
| 40° | 7419 | 6772 | 6095 |
| 45° | 6994 | 6261 | 5511 |
| 50° | 6475 | 5811 | 4914 |
| 55° | 5990 | 5266 | 4402 |
| 60° | 5488 | 4704 | 3943 |
| 65° | 4828 | 4119 | 3492 |
| 70° | 3978 | 3607 | 2966 |
| 75° | 3162 | 2761 | 2895 |
| 80° | 2125 | 1991 | 1859 |
| 85° | 1323 | 1587 | 1853 |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 6994 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 689.9   | 4.7       |
| 10°-20°   | 1893.4  | 13.0      |
| 20°-30°   | 2621.3  | 18.0      |
| 30°-40°   | 2795.1  | 19.2      |
| 40°-50°   | 2549.9  | 17.5      |
| 50°-60°   | 1997.7  | 13.7      |
| 60°-70°   | 1302.0  | 8.9       |
| 70°-80°   | 576.8   | 4.0       |
| 80°-90°   | 123.8   | 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°    | 5204.7  | 35.8      |
| 0°-40°    | 7999.7  | 55.0      |
| 0°-60°    | 12547.3 | 86.2      |
| 0°-90°    | 14550.0 | 100.0     |
| 90°-120°  | 0.0     | 0.0       |
| 90°-150°  | 0.0     | 0.0       |
| 90°-180°  | 0.0     | 0.0       |
| 0°-180°   | 14550.0 | 100.0     |

**CANDELA DISTRIBUTION:**

|     | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|-----|------|-------|------|-------|------|------|
| 0°  | 7412 | 7412  | 7412 | 7412  | 7412 |      |
| 5°  | 7283 | 7274  | 7274 | 7266  | 7266 | 691  |
| 15° | 6812 | 6812  | 6743 | 6675  | 6649 | 1915 |
| 25° | 5904 | 5869  | 5775 | 5569  | 5415 | 2710 |
| 35° | 4790 | 4755  | 4524 | 4181  | 4078 | 2994 |
| 45° | 3676 | 3599  | 3290 | 3016  | 2896 | 2831 |
| 55° | 2553 | 2476  | 2245 | 1979  | 1876 | 2290 |
| 65° | 1517 | 1431  | 1294 | 1320  | 1097 | 1495 |
| 75° | 608  | 566   | 531  | 506   | 557  | 652  |
| 85° | 86   | 94    | 103  | 111   | 120  | 119  |
| 90° | 0    | 0     | 0    | 0     | 0    |      |

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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|-------|--------|--------|--------|--------|--------|
| 0°    | 7411.6 | 7411.6 | 7411.6 | 7411.6 | 7411.6 |
| 2.5°  | 7360.2 | 7360.2 | 7360.2 | 7351.6 | 7351.6 |
| 5°    | 7283.1 | 7274.5 | 7274.5 | 7265.9 | 7265.9 |
| 7.5°  | 7223.1 | 7214.5 | 7205.9 | 7197.4 | 7180.2 |
| 10°   | 7137.4 | 7137.4 | 7128.8 | 7086.0 | 7077.4 |
| 12.5° | 7000.3 | 6991.7 | 6957.5 | 6897.5 | 6880.3 |
| 15°   | 6811.8 | 6811.8 | 6743.2 | 6674.7 | 6649.0 |
| 17.5° | 6606.2 | 6597.6 | 6511.9 | 6443.4 | 6409.1 |
| 20°   | 6383.4 | 6366.2 | 6280.6 | 6169.2 | 6109.2 |
| 22.5° | 6134.9 | 6134.9 | 6032.1 | 5886.4 | 5826.4 |
| 25°   | 5903.6 | 5869.3 | 5775.0 | 5569.4 | 5415.2 |
| 27.5° | 5637.9 | 5586.5 | 5483.7 | 5192.4 | 5012.5 |
| 30°   | 5346.6 | 5320.9 | 5175.3 | 4798.2 | 4661.2 |
| 32.5° | 5072.4 | 5029.6 | 4875.4 | 4481.2 | 4369.8 |
| 35°   | 4789.7 | 4755.4 | 4524.1 | 4181.3 | 4078.5 |
| 37.5° | 4506.9 | 4464.1 | 4172.8 | 3898.6 | 3770.1 |
| 40°   | 4224.2 | 4172.8 | 3855.7 | 3607.3 | 3470.2 |
| 42.5° | 3958.6 | 3890.0 | 3581.5 | 3315.9 | 3161.7 |
| 45°   | 3675.8 | 3598.7 | 3290.2 | 3016.0 | 2896.1 |
| 47.5° | 3393.0 | 3324.5 | 3041.7 | 2759.0 | 2621.9 |
| 50°   | 3093.2 | 3033.2 | 2776.1 | 2493.4 | 2347.7 |
| 52.5° | 2844.7 | 2750.4 | 2501.9 | 2219.2 | 2099.2 |
| 55°   | 2553.4 | 2476.2 | 2244.9 | 1979.3 | 1876.5 |
| 57.5° | 2287.7 | 2210.6 | 1996.4 | 1747.9 | 1662.2 |
| 60°   | 2039.3 | 1927.9 | 1747.9 | 1533.7 | 1465.2 |
| 62.5° | 1765.1 | 1679.4 | 1525.2 | 1345.2 | 1430.9 |
| 65°   | 1516.6 | 1430.9 | 1293.8 | 1319.5 | 1096.7 |
| 67.5° | 1242.4 | 1199.6 | 1079.6 | 959.6  | 925.4  |
| 70°   | 1011.1 | 959.6  | 916.8  | 788.3  | 754.0  |
| 72.5° | 805.4  | 754.0  | 694.0  | 625.5  | 599.8  |
| 75°   | 608.3  | 565.5  | 531.2  | 505.5  | 556.9  |
| 77.5° | 419.8  | 402.7  | 377.0  | 351.3  | 342.7  |
| 80°   | 274.2  | 265.6  | 257.0  | 248.5  | 239.9  |
| 82.5° | 162.8  | 162.8  | 162.8  | 162.8  | 162.8  |
| 85°   | 85.7   | 94.3   | 102.8  | 111.4  | 120.0  |
| 87.5° | 51.4   | 51.4   | 60.0   | 68.5   | 77.1   |
| 90°   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |

(END OF REPORT)