

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: P560769

Luminaire Tested: FSR-12-4-LD4-1HI-35-UNV-81-84-EDD

Issue Date: 7/20/2021

**Test Information**

Test Method: LM-79-2019  
Report Number: P560769  
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-12-4-LD4-1HI-35-UNV-81-84-EDD  
Description: 1X4 FSR TROFFER WITH .156 CLEAR PC FIXTURE SIDE AND .125 CLEAR PC ENVIRONMENTAL SI  
LENSES WITH, 80 CRI AND 3500K CCT LEDS  
Light Source: -  
Ballast/Driver: -

**Summary**

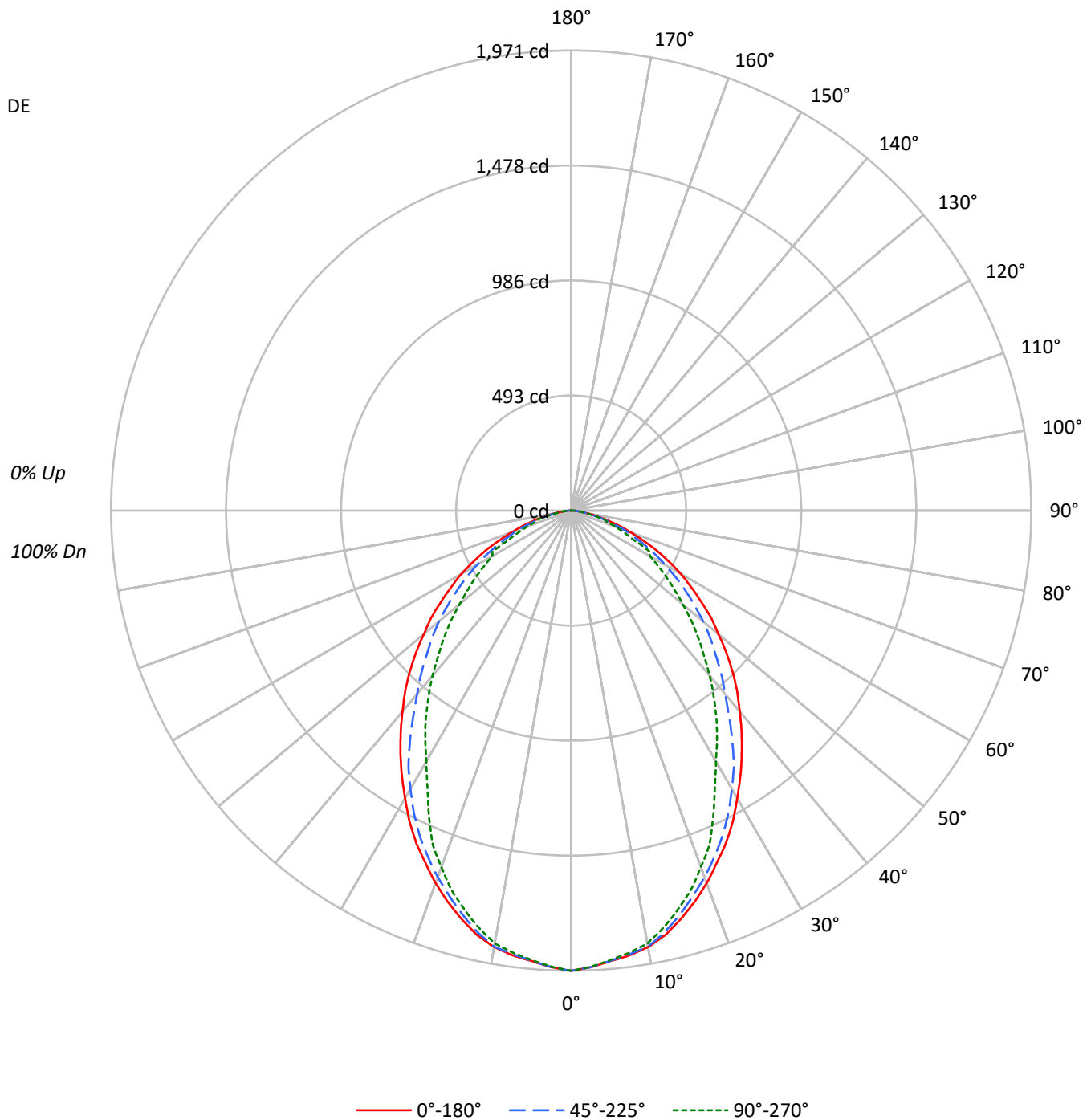
Lumens per Lamp: N/A  
Luminaire Lumens: 3870.0 lumens  
Efficiency: N/A  
Efficacy: 89.6 lumens/watt  
Spacing Criteria (0/90/45): 1.1 / 1 / 1.15  
Luminous Opening: Rectangular (W 1' x L: 4' x H: 0')  
CIE Type: Direct  
  
Input Watts (W): 43.2  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage 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  | 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°  | 5305 | 5305 | 5305 |
| 5°  | 5233 | 5227 | 5220 |
| 10° | 5187 | 5181 | 5144 |
| 15° | 5048 | 4997 | 4927 |
| 20° | 4862 | 4784 | 4653 |
| 25° | 4662 | 4561 | 4276 |
| 30° | 4419 | 4277 | 3852 |
| 35° | 4185 | 3953 | 3564 |
| 40° | 3947 | 3602 | 3242 |
| 45° | 3721 | 3330 | 2931 |
| 50° | 3444 | 3091 | 2614 |
| 55° | 3186 | 2801 | 2342 |
| 60° | 2919 | 2502 | 2097 |
| 65° | 2569 | 2191 | 1857 |
| 70° | 2116 | 1919 | 1578 |
| 75° | 1682 | 1469 | 1540 |
| 80° | 1130 | 1060 | 989  |
| 85° | 704  | 843  | 985  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 3721 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 183.5  | 4.7       |
| 10°-20°   | 503.6  | 13.0      |
| 20°-30°   | 697.2  | 18.0      |
| 30°-40°   | 743.4  | 19.2      |
| 40°-50°   | 678.2  | 17.5      |
| 50°-60°   | 531.3  | 13.7      |
| 60°-70°   | 346.3  | 8.9       |
| 70°-80°   | 153.4  | 4.0       |
| 80°-90°   | 32.9   | 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°    | 1384.3 | 35.8      |
| 0°-40°    | 2127.8 | 55.0      |
| 0°-60°    | 3337.3 | 86.2      |
| 0°-90°    | 3870.0 | 100.0     |
| 90°-120°  | 0.0    | 0.0       |
| 90°-150°  | 0.0    | 0.0       |
| 90°-180°  | 0.0    | 0.0       |
| 0°-180°   | 3870.0 | 100.0     |

**CANDELA DISTRIBUTION:**

|     | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|-----|------|-------|------|-------|------|------|
| 0°  | 1971 | 1971  | 1971 | 1971  | 1971 |      |
| 5°  | 1937 | 1935  | 1935 | 1933  | 1933 | 184  |
| 15° | 1812 | 1812  | 1794 | 1775  | 1768 | 509  |
| 25° | 1570 | 1561  | 1536 | 1481  | 1440 | 721  |
| 35° | 1274 | 1265  | 1203 | 1112  | 1085 | 796  |
| 45° | 978  | 957   | 875  | 802   | 770  | 753  |
| 55° | 679  | 659   | 597  | 526   | 499  | 609  |
| 65° | 403  | 381   | 344  | 351   | 292  | 398  |
| 75° | 162  | 150   | 141  | 134   | 148  | 173  |
| 85° | 23   | 25    | 27   | 30    | 32   | 32   |
| 90° | 0    | 0     | 0    | 0     | 0    |      |



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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|-------|--------|--------|--------|--------|--------|
| 0°    | 1971.3 | 1971.3 | 1971.3 | 1971.3 | 1971.3 |
| 2.5°  | 1957.7 | 1957.7 | 1957.7 | 1955.4 | 1955.4 |
| 5°    | 1937.1 | 1934.9 | 1934.9 | 1932.6 | 1932.6 |
| 7.5°  | 1921.2 | 1918.9 | 1916.6 | 1914.4 | 1909.8 |
| 10°   | 1898.4 | 1898.4 | 1896.1 | 1884.7 | 1882.4 |
| 12.5° | 1861.9 | 1859.7 | 1850.5 | 1834.6 | 1830.0 |
| 15°   | 1811.8 | 1811.8 | 1793.6 | 1775.3 | 1768.5 |
| 17.5° | 1757.1 | 1754.8 | 1732.0 | 1713.8 | 1704.7 |
| 20°   | 1697.8 | 1693.3 | 1670.5 | 1640.9 | 1624.9 |
| 22.5° | 1631.8 | 1631.8 | 1604.4 | 1565.7 | 1549.7 |
| 25°   | 1570.2 | 1561.1 | 1536.0 | 1481.3 | 1440.3 |
| 27.5° | 1499.6 | 1485.9 | 1458.6 | 1381.1 | 1333.2 |
| 30°   | 1422.1 | 1415.3 | 1376.5 | 1276.2 | 1239.8 |
| 32.5° | 1349.2 | 1337.8 | 1296.7 | 1191.9 | 1162.3 |
| 35°   | 1274.0 | 1264.8 | 1203.3 | 1112.1 | 1084.8 |
| 37.5° | 1198.7 | 1187.4 | 1109.9 | 1036.9 | 1002.8 |
| 40°   | 1123.5 | 1109.9 | 1025.5 | 959.5  | 923.0  |
| 42.5° | 1052.9 | 1034.7 | 952.6  | 882.0  | 840.9  |
| 45°   | 977.7  | 957.2  | 875.1  | 802.2  | 770.3  |
| 47.5° | 902.5  | 884.2  | 809.0  | 733.8  | 697.4  |
| 50°   | 822.7  | 806.8  | 738.4  | 663.2  | 624.4  |
| 52.5° | 756.6  | 731.6  | 665.5  | 590.3  | 558.4  |
| 55°   | 679.1  | 658.6  | 597.1  | 526.4  | 499.1  |
| 57.5° | 608.5  | 588.0  | 531.0  | 464.9  | 442.1  |
| 60°   | 542.4  | 512.8  | 464.9  | 407.9  | 389.7  |
| 62.5° | 469.5  | 446.7  | 405.7  | 357.8  | 380.6  |
| 65°   | 403.4  | 380.6  | 344.1  | 351.0  | 291.7  |
| 67.5° | 330.5  | 319.1  | 287.2  | 255.2  | 246.1  |
| 70°   | 268.9  | 255.2  | 243.9  | 209.7  | 200.6  |
| 72.5° | 214.2  | 200.6  | 184.6  | 166.4  | 159.5  |
| 75°   | 161.8  | 150.4  | 141.3  | 134.5  | 148.1  |
| 77.5° | 111.7  | 107.1  | 100.3  | 93.4   | 91.2   |
| 80°   | 72.9   | 70.6   | 68.4   | 66.1   | 63.8   |
| 82.5° | 43.3   | 43.3   | 43.3   | 43.3   | 43.3   |
| 85°   | 22.8   | 25.1   | 27.3   | 29.6   | 31.9   |
| 87.5° | 13.7   | 13.7   | 16.0   | 18.2   | 20.5   |
| 90°   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |

(END OF REPORT)