

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: P562070

Luminaire Tested: FSR-24-4-LD4-1HI-40-UNV-82-87-EDD-90

Issue Date: 7/20/2021

**Test Information**

Test Method: LM-79-2019  
Report Number: P562070  
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-LD4-1HI-40-UNV-82-87-EDD-90  
Description: 2X4 FSR TROFFER WITH .187 CLEAR PC FIXTURE SIDE AND .375 CLEAR PC ENVIRONMENTAL SI  
LENSES WITH, 90 CRI AND 4000K CCT LEDS  
Light Source: -  
Ballast/Driver: -

**Summary**

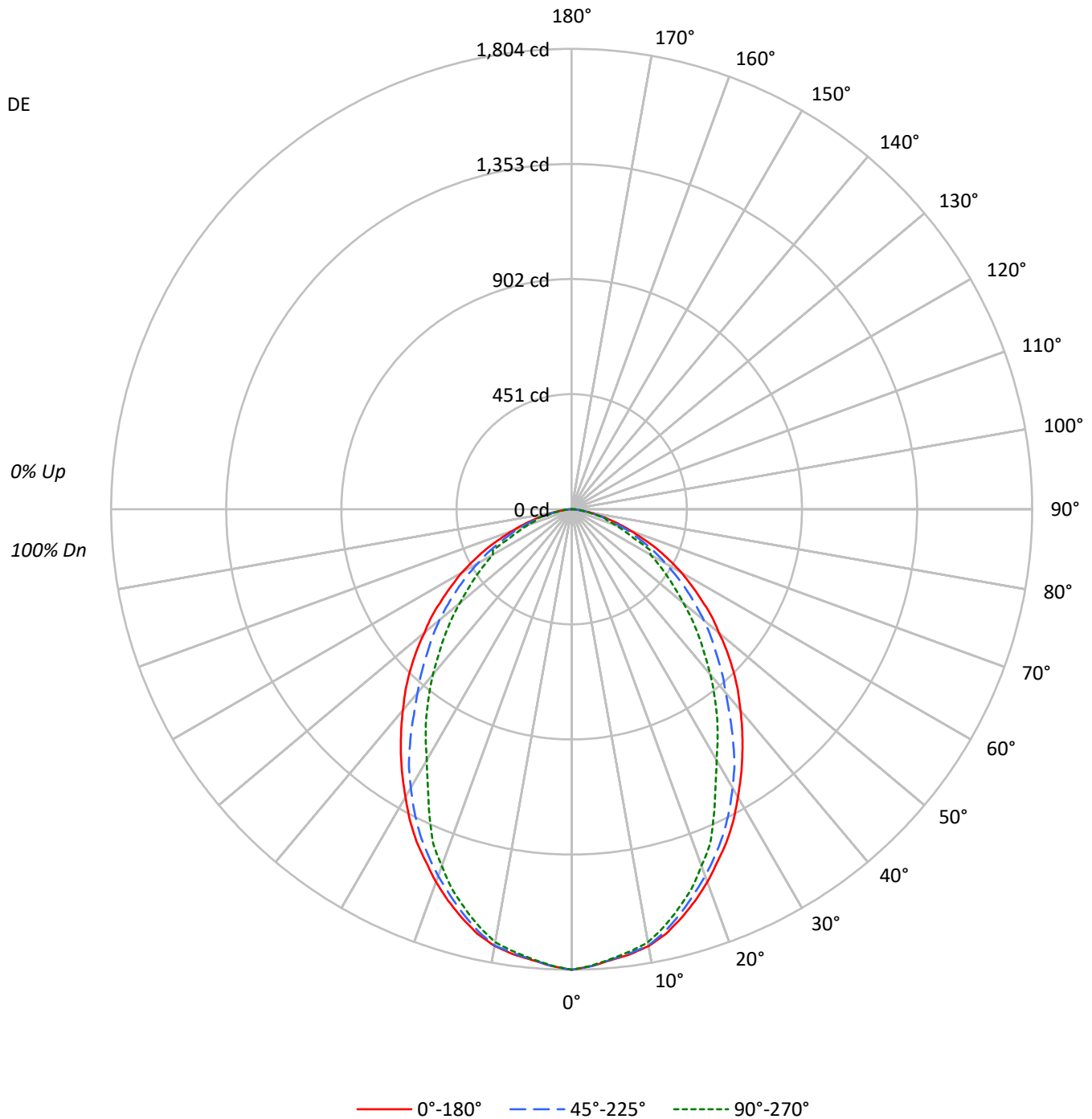
Lumens per Lamp: N/A  
Luminaire Lumens: 3542.0 lumens  
Efficiency: N/A  
Efficacy: 82.0 lumens/watt  
Spacing Criteria (0/90/45): 1.1 / 1 / 1.15  
Luminous Opening: Rectangular (W 2' x L: 4' x H: 0')  
CIE Type: Direct  
  
Input Watts (W): 43.2  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage 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 | 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°  | 2428 | 2428 | 2428 |
| 5°  | 2395 | 2392 | 2389 |
| 10° | 2374 | 2371 | 2354 |
| 15° | 2310 | 2287 | 2255 |
| 20° | 2225 | 2189 | 2129 |
| 25° | 2133 | 2087 | 1957 |
| 30° | 2022 | 1957 | 1763 |
| 35° | 1915 | 1809 | 1631 |
| 40° | 1806 | 1649 | 1484 |
| 45° | 1703 | 1524 | 1341 |
| 50° | 1576 | 1415 | 1196 |
| 55° | 1458 | 1282 | 1072 |
| 60° | 1336 | 1145 | 960  |
| 65° | 1175 | 1003 | 850  |
| 70° | 968  | 878  | 722  |
| 75° | 770  | 672  | 705  |
| 80° | 517  | 485  | 453  |
| 85° | 323  | 386  | 451  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 1703 cd/sqm



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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 168.0  | 4.7       |
| 10°-20°   | 460.9  | 13.0      |
| 20°-30°   | 638.1  | 18.0      |
| 30°-40°   | 680.4  | 19.2      |
| 40°-50°   | 620.8  | 17.5      |
| 50°-60°   | 486.3  | 13.7      |
| 60°-70°   | 316.9  | 8.9       |
| 70°-80°   | 140.4  | 4.0       |
| 80°-90°   | 30.1   | 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°    | 1267.0 | 35.8      |
| 0°-40°    | 1947.4 | 55.0      |
| 0°-60°    | 3054.5 | 86.2      |
| 0°-90°    | 3542.0 | 100.0     |
| 90°-120°  | 0.0    | 0.0       |
| 90°-150°  | 0.0    | 0.0       |
| 90°-180°  | 0.0    | 0.0       |
| 0°-180°   | 3542.0 | 100.0     |

**CANDELA DISTRIBUTION:**

|     | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|-----|------|-------|------|-------|------|------|
| 0°  | 1804 | 1804  | 1804 | 1804  | 1804 |      |
| 5°  | 1773 | 1771  | 1771 | 1769  | 1769 | 168  |
| 15° | 1658 | 1658  | 1642 | 1625  | 1619 | 466  |
| 25° | 1437 | 1429  | 1406 | 1356  | 1318 | 660  |
| 35° | 1166 | 1158  | 1101 | 1018  | 993  | 729  |
| 45° | 895  | 876   | 801  | 734   | 705  | 689  |
| 55° | 622  | 603   | 546  | 482   | 457  | 558  |
| 65° | 369  | 348   | 315  | 321   | 267  | 364  |
| 75° | 148  | 138   | 129  | 123   | 136  | 159  |
| 85° | 21   | 23    | 25   | 27    | 29   | 29   |
| 90° | 0    | 0     | 0    | 0     | 0    |      |



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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|-------|--------|--------|--------|--------|--------|
| 0°    | 1804.2 | 1804.2 | 1804.2 | 1804.2 | 1804.2 |
| 2.5°  | 1791.7 | 1791.7 | 1791.7 | 1789.6 | 1789.6 |
| 5°    | 1773.0 | 1770.9 | 1770.9 | 1768.8 | 1768.8 |
| 7.5°  | 1758.4 | 1756.3 | 1754.2 | 1752.1 | 1747.9 |
| 10°   | 1737.5 | 1737.5 | 1735.4 | 1725.0 | 1722.9 |
| 12.5° | 1704.1 | 1702.0 | 1693.7 | 1679.1 | 1674.9 |
| 15°   | 1658.2 | 1658.2 | 1641.6 | 1624.9 | 1618.6 |
| 17.5° | 1608.2 | 1606.1 | 1585.2 | 1568.5 | 1560.2 |
| 20°   | 1553.9 | 1549.8 | 1528.9 | 1501.8 | 1487.2 |
| 22.5° | 1493.5 | 1493.5 | 1468.4 | 1433.0 | 1418.4 |
| 25°   | 1437.1 | 1428.8 | 1405.9 | 1355.8 | 1318.2 |
| 27.5° | 1372.5 | 1360.0 | 1334.9 | 1264.0 | 1220.2 |
| 30°   | 1301.6 | 1295.3 | 1259.8 | 1168.1 | 1134.7 |
| 32.5° | 1234.8 | 1224.4 | 1186.8 | 1090.9 | 1063.8 |
| 35°   | 1166.0 | 1157.6 | 1101.3 | 1017.9 | 992.9  |
| 37.5° | 1097.1 | 1086.7 | 1015.8 | 949.1  | 917.8  |
| 40°   | 1028.3 | 1015.8 | 938.6  | 878.1  | 844.8  |
| 42.5° | 963.7  | 947.0  | 871.9  | 807.2  | 769.7  |
| 45°   | 894.8  | 876.1  | 801.0  | 734.2  | 705.0  |
| 47.5° | 826.0  | 809.3  | 740.5  | 671.6  | 638.3  |
| 50°   | 753.0  | 738.4  | 675.8  | 607.0  | 571.5  |
| 52.5° | 692.5  | 669.6  | 609.1  | 540.2  | 511.0  |
| 55°   | 621.6  | 602.8  | 546.5  | 481.8  | 456.8  |
| 57.5° | 556.9  | 538.1  | 486.0  | 425.5  | 404.7  |
| 60°   | 496.4  | 469.3  | 425.5  | 373.4  | 356.7  |
| 62.5° | 429.7  | 408.8  | 371.3  | 327.5  | 348.3  |
| 65°   | 369.2  | 348.3  | 315.0  | 321.2  | 267.0  |
| 67.5° | 302.4  | 292.0  | 262.8  | 233.6  | 225.3  |
| 70°   | 246.1  | 233.6  | 223.2  | 191.9  | 183.6  |
| 72.5° | 196.1  | 183.6  | 169.0  | 152.3  | 146.0  |
| 75°   | 148.1  | 137.7  | 129.3  | 123.1  | 135.6  |
| 77.5° | 102.2  | 98.0   | 91.8   | 85.5   | 83.4   |
| 80°   | 66.7   | 64.7   | 62.6   | 60.5   | 58.4   |
| 82.5° | 39.6   | 39.6   | 39.6   | 39.6   | 39.6   |
| 85°   | 20.9   | 22.9   | 25.0   | 27.1   | 29.2   |
| 87.5° | 12.5   | 12.5   | 14.6   | 16.7   | 18.8   |
| 90°   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |

(END OF REPORT)