

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: P561578

Luminaire Tested: FSR-12-4-LD4-2LO-35-UNV-93-94-EDD-90

Issue Date: 7/20/2021

**Test Information**

Test Method: LM-79-2019  
Report Number: P561578  
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-LD4-2LO-35-UNV-93-94-EDD-90  
Description: 1X4 FSR TROFFER WITH .156 CLEAR TEMPERED GLASS FIXTURE SIDE AND .187 CLEAR TEMPER  
GLASS ENVIRONMENTAL SIDE LENSES WITH, 90 CRI AND 3500K CCT LEDS  
Light Source: -  
Ballast/Driver: -

**Summary**

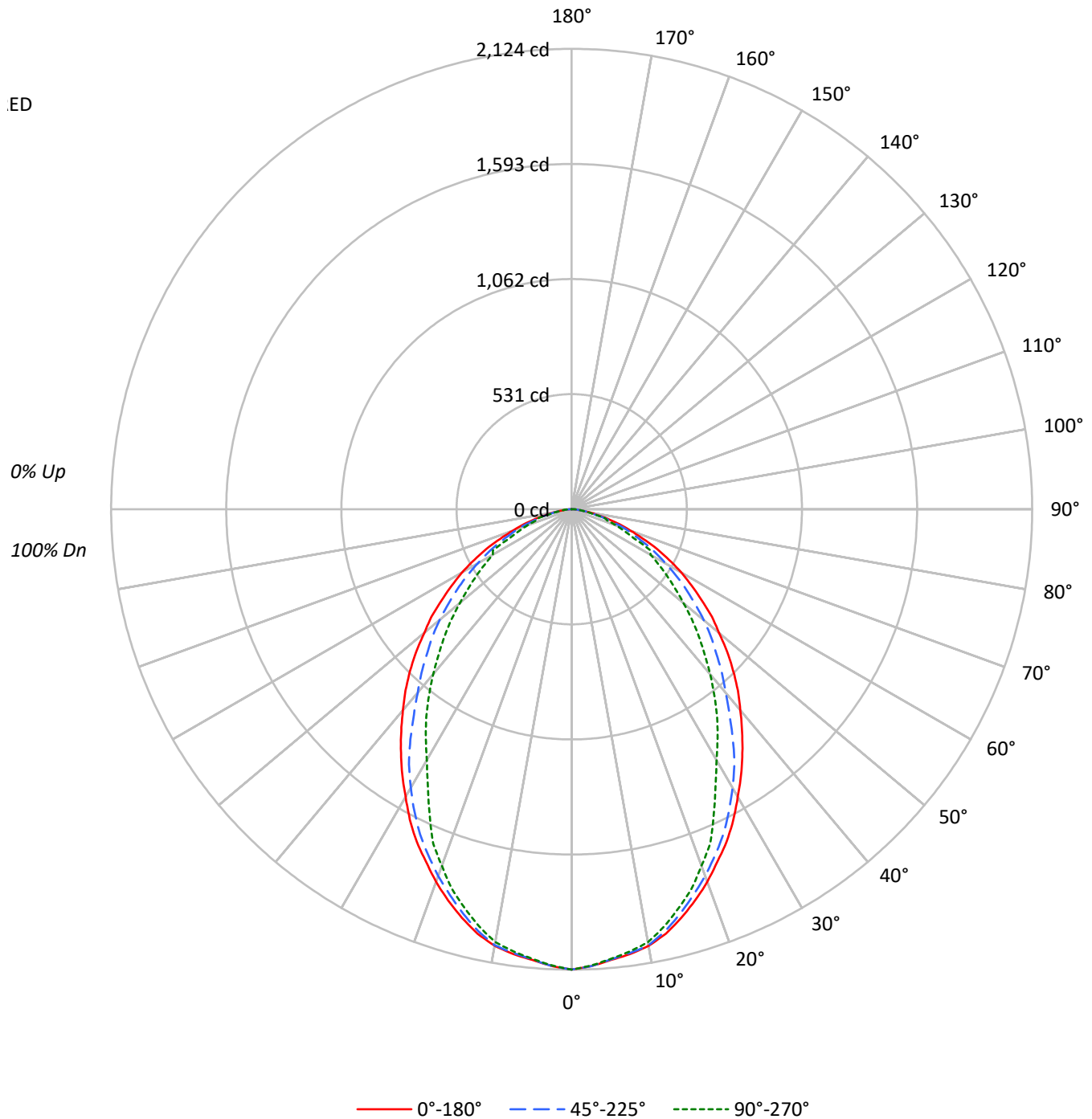
Lumens per Lamp: N/A  
Luminaire Lumens: 4169.0 lumens  
Efficiency: N/A  
Efficacy: 89.1 lumens/watt  
Spacing Criteria (0/90/45): 1.1 / 1 / 1.15  
Luminous Opening: Rectangular (W 1' x L: 4' x H: 0')  
CIE Type: Direct  
  
Input Watts (W): 46.8  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage 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  | 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°  | 5715 | 5715 | 5715 |
| 5°  | 5637 | 5631 | 5624 |
| 10° | 5588 | 5581 | 5541 |
| 15° | 5438 | 5383 | 5307 |
| 20° | 5238 | 5153 | 5013 |
| 25° | 5022 | 4913 | 4607 |
| 30° | 4760 | 4608 | 4150 |
| 35° | 4508 | 4258 | 3839 |
| 40° | 4252 | 3881 | 3493 |
| 45° | 4008 | 3588 | 3158 |
| 50° | 3710 | 3330 | 2816 |
| 55° | 3432 | 3018 | 2523 |
| 60° | 3145 | 2695 | 2259 |
| 65° | 2767 | 2360 | 2001 |
| 70° | 2279 | 2067 | 1699 |
| 75° | 1812 | 1582 | 1659 |
| 80° | 1218 | 1142 | 1065 |
| 85° | 760  | 911  | 1062 |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 4008 cd/sqm



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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 197.7  | 4.7       |
| 10°-20°   | 542.5  | 13.0      |
| 20°-30°   | 751.1  | 18.0      |
| 30°-40°   | 800.9  | 19.2      |
| 40°-50°   | 730.6  | 17.5      |
| 50°-60°   | 572.4  | 13.7      |
| 60°-70°   | 373.0  | 8.9       |
| 70°-80°   | 165.3  | 4.0       |
| 80°-90°   | 35.5   | 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°    | 1491.3 | 35.8      |
| 0°-40°    | 2292.2 | 55.0      |
| 0°-60°    | 3595.2 | 86.2      |
| 0°-90°    | 4169.0 | 100.0     |
| 90°-120°  | 0.0    | 0.0       |
| 90°-150°  | 0.0    | 0.0       |
| 90°-180°  | 0.0    | 0.0       |
| 0°-180°   | 4169.0 | 100.0     |

**CANDELA DISTRIBUTION:**

|     | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|-----|------|-------|------|-------|------|------|
| 0°  | 2124 | 2124  | 2124 | 2124  | 2124 |      |
| 5°  | 2087 | 2084  | 2084 | 2082  | 2082 | 198  |
| 15° | 1952 | 1952  | 1932 | 1912  | 1905 | 549  |
| 25° | 1692 | 1682  | 1655 | 1596  | 1552 | 777  |
| 35° | 1372 | 1363  | 1296 | 1198  | 1169 | 858  |
| 45° | 1053 | 1031  | 943  | 864   | 830  | 811  |
| 55° | 732  | 710   | 643  | 567   | 538  | 656  |
| 65° | 434  | 410   | 371  | 378   | 314  | 428  |
| 75° | 174  | 162   | 152  | 145   | 160  | 187  |
| 85° | 25   | 27    | 30   | 32    | 34   | 34   |
| 90° | 0    | 0     | 0    | 0     | 0    |      |



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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|-------|--------|--------|--------|--------|--------|
| 0°    | 2123.6 | 2123.6 | 2123.6 | 2123.6 | 2123.6 |
| 2.5°  | 2108.9 | 2108.9 | 2108.9 | 2106.4 | 2106.4 |
| 5°    | 2086.8 | 2084.4 | 2084.4 | 2081.9 | 2081.9 |
| 7.5°  | 2069.6 | 2067.2 | 2064.7 | 2062.3 | 2057.3 |
| 10°   | 2045.1 | 2045.1 | 2042.6 | 2030.3 | 2027.9 |
| 12.5° | 2005.8 | 2003.3 | 1993.5 | 1976.3 | 1971.4 |
| 15°   | 1951.8 | 1951.8 | 1932.1 | 1912.5 | 1905.1 |
| 17.5° | 1892.9 | 1890.4 | 1865.9 | 1846.2 | 1836.4 |
| 20°   | 1829.0 | 1824.1 | 1799.6 | 1767.6 | 1750.5 |
| 22.5° | 1757.8 | 1757.8 | 1728.4 | 1686.6 | 1669.4 |
| 25°   | 1691.5 | 1681.7 | 1654.7 | 1595.8 | 1551.6 |
| 27.5° | 1615.4 | 1600.7 | 1571.2 | 1487.8 | 1436.2 |
| 30°   | 1532.0 | 1524.6 | 1482.9 | 1374.8 | 1335.6 |
| 32.5° | 1453.4 | 1441.1 | 1396.9 | 1284.0 | 1252.1 |
| 35°   | 1372.4 | 1362.6 | 1296.3 | 1198.1 | 1168.6 |
| 37.5° | 1291.4 | 1279.1 | 1195.6 | 1117.1 | 1080.2 |
| 40°   | 1210.3 | 1195.6 | 1104.8 | 1033.6 | 994.3  |
| 42.5° | 1134.2 | 1114.6 | 1026.2 | 950.1  | 905.9  |
| 45°   | 1053.2 | 1031.1 | 942.7  | 864.2  | 829.8  |
| 47.5° | 972.2  | 952.6  | 871.5  | 790.5  | 751.3  |
| 50°   | 886.3  | 869.1  | 795.4  | 714.4  | 672.7  |
| 52.5° | 815.1  | 788.1  | 716.9  | 635.9  | 601.5  |
| 55°   | 731.6  | 709.5  | 643.2  | 567.1  | 537.7  |
| 57.5° | 655.5  | 633.4  | 572.0  | 500.8  | 476.3  |
| 60°   | 584.3  | 552.4  | 500.8  | 439.5  | 419.8  |
| 62.5° | 505.7  | 481.2  | 437.0  | 385.4  | 410.0  |
| 65°   | 434.5  | 410.0  | 370.7  | 378.1  | 314.2  |
| 67.5° | 356.0  | 343.7  | 309.3  | 275.0  | 265.1  |
| 70°   | 289.7  | 275.0  | 262.7  | 225.9  | 216.0  |
| 72.5° | 230.8  | 216.0  | 198.9  | 179.2  | 171.9  |
| 75°   | 174.3  | 162.0  | 152.2  | 144.8  | 159.6  |
| 77.5° | 120.3  | 115.4  | 108.0  | 100.7  | 98.2   |
| 80°   | 78.6   | 76.1   | 73.7   | 71.2   | 68.7   |
| 82.5° | 46.6   | 46.6   | 46.6   | 46.6   | 46.6   |
| 85°   | 24.6   | 27.0   | 29.5   | 31.9   | 34.4   |
| 87.5° | 14.7   | 14.7   | 17.2   | 19.6   | 22.1   |
| 90°   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |

(END OF REPORT)