

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: P590053

Luminaire Tested: FSR-24-2-LD4-1STD-35-UNV-82-84-EDD

Issue Date: 12/8/2021

**Test Information**

Test Method: LM-79-2019  
Report Number: P590053  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-2102-135-1)  
Test Lab: INNOVATION CENTER  
Issue Date: 12/8/2021  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: FAIL-SAFE  
Catalog Number: FSR-24-2-LD4-1STD-35-UNV-82-84-EDD  
Description: 2X2 FSR TROFFER WITH .187 CLEAR PC FIXTURE SIDE AND .125 CLEAR PC ENVIRONMENTAL SI  
LENSES WITH, 80 CRI AND 3500K CCT LEDS  
Light Source: -  
Ballast/Driver: -

**Summary**

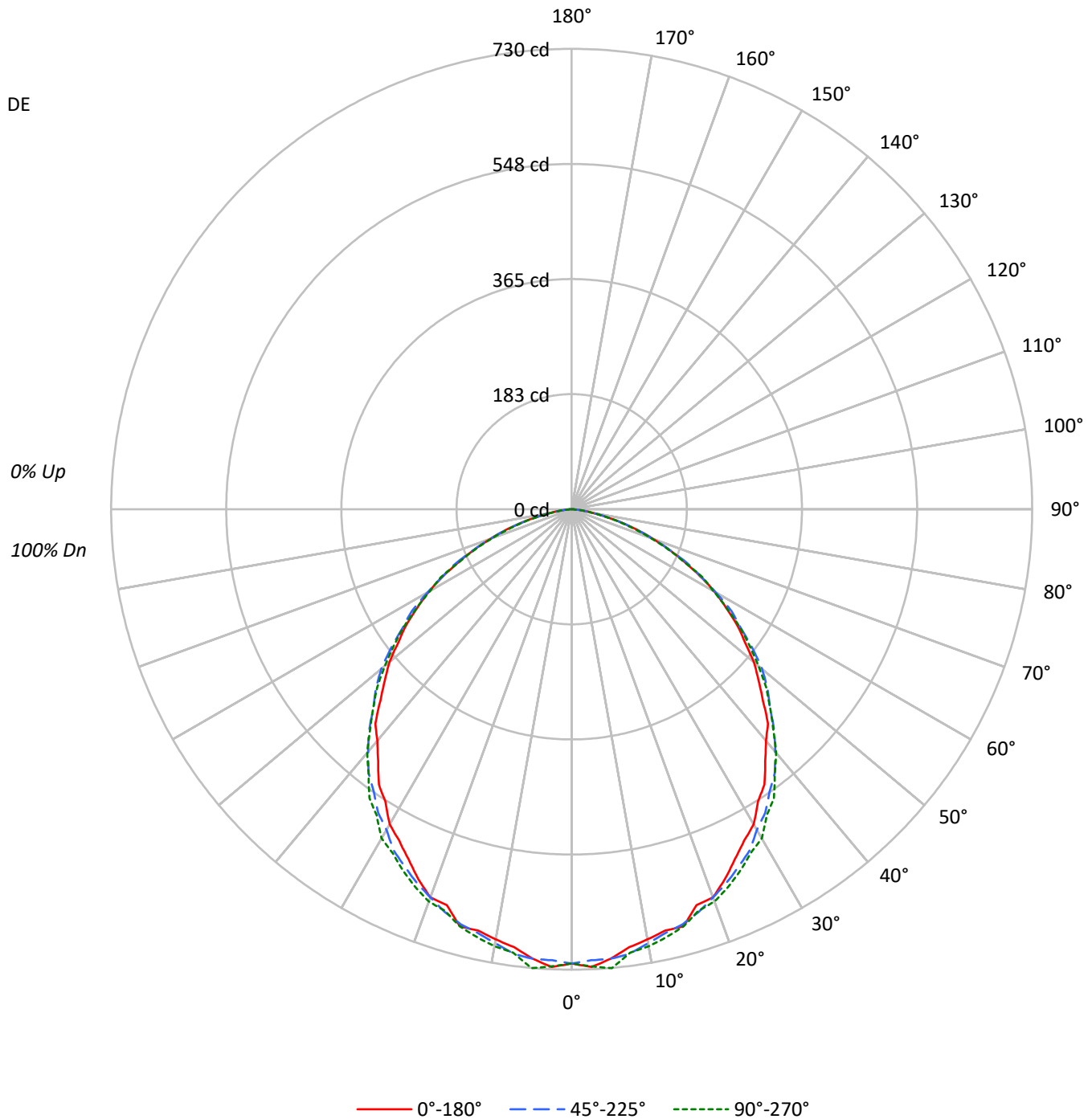
Lumens per Lamp: N/A  
Luminaire Lumens: 1815.0 lumens  
Efficiency: N/A  
Efficacy: 109.3 lumens/watt  
Spacing Criteria (0/90/45): 1.19 / 1.23 / 1.33  
Luminous Opening: Rectangular (W 2' x L: 2' x H: 0')  
CIE Type: Direct  
  
Input Watts (W): 16.6  
Input Voltage (V):  
Input Current (Ain): NR  
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  | 0 |  |   |
| RCR |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |    |    |    |    |     |   |  |   |
| 0   | 119 | 119 | 119 | 119 | 116 | 116 | 116 | 116 | 111 | 111 | 111 | 106 | 106 | 106 | 102 | 102 | 102 | 100 |    |    |    |    | 100 |   |  |   |
| 1   | 110 | 105 | 101 | 98  | 107 | 103 | 100 | 96  | 99  | 96  | 93  | 95  | 93  | 90  | 91  | 90  | 88  | 86  |    |    |    |    | 86  |   |  |   |
| 2   | 100 | 93  | 86  | 81  | 98  | 91  | 85  | 80  | 87  | 82  | 78  | 84  | 80  | 76  | 81  | 78  | 75  | 73  |    |    |    |    | 73  |   |  |   |
| 3   | 92  | 82  | 74  | 68  | 89  | 80  | 73  | 67  | 77  | 71  | 66  | 75  | 69  | 65  | 72  | 68  | 64  | 62  |    |    |    |    | 62  |   |  |   |
| 4   | 84  | 73  | 64  | 58  | 82  | 71  | 64  | 58  | 69  | 62  | 57  | 67  | 61  | 56  | 65  | 59  | 55  | 53  |    |    |    |    | 53  |   |  |   |
| 5   | 78  | 65  | 57  | 50  | 76  | 64  | 56  | 50  | 62  | 55  | 49  | 60  | 54  | 49  | 58  | 53  | 48  | 46  |    |    |    |    | 46  |   |  |   |
| 6   | 72  | 59  | 50  | 44  | 70  | 58  | 50  | 44  | 56  | 49  | 43  | 54  | 48  | 43  | 53  | 47  | 43  | 41  |    |    |    |    | 41  |   |  |   |
| 7   | 67  | 53  | 45  | 39  | 65  | 53  | 45  | 39  | 51  | 44  | 39  | 50  | 43  | 38  | 48  | 42  | 38  | 36  |    |    |    |    | 36  |   |  |   |
| 8   | 62  | 49  | 41  | 35  | 61  | 48  | 40  | 35  | 47  | 40  | 34  | 46  | 39  | 34  | 44  | 39  | 34  | 32  |    |    |    |    | 32  |   |  |   |
| 9   | 58  | 45  | 37  | 31  | 57  | 44  | 37  | 31  | 43  | 36  | 31  | 42  | 36  | 31  | 41  | 35  | 31  | 29  |    |    |    |    | 29  |   |  |   |
| 10  | 54  | 41  | 34  | 29  | 53  | 41  | 33  | 28  | 40  | 33  | 28  | 39  | 33  | 28  | 38  | 32  | 28  | 26  |    |    |    |    | 26  |   |  |   |

**AVERAGE LUMINANCE (cd/sqm):**

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 1938 | 1938 | 1938 |
| 5°  | 1931 | 1932 | 1973 |
| 10° | 1892 | 1909 | 1922 |
| 15° | 1907 | 1897 | 1908 |
| 20° | 1875 | 1875 | 1895 |
| 25° | 1817 | 1857 | 1878 |
| 30° | 1793 | 1824 | 1872 |
| 35° | 1750 | 1796 | 1836 |
| 40° | 1682 | 1763 | 1771 |
| 45° | 1631 | 1689 | 1692 |
| 50° | 1578 | 1649 | 1617 |
| 55° | 1503 | 1532 | 1521 |
| 60° | 1406 | 1420 | 1394 |
| 65° | 1253 | 1286 | 1244 |
| 70° | 1076 | 1079 | 1049 |
| 75° | 852  | 849  | 817  |
| 80° | 570  | 555  | 533  |
| 85° | 309  | 306  | 287  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 67.5°  
 Vertical Angle: 45°  
 Luminance: 1733 cd/sqm



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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 67.7   | 3.7       |
| 10°-20°   | 192.0  | 10.6      |
| 20°-30°   | 287.6  | 15.8      |
| 30°-40°   | 340.9  | 18.8      |
| 40°-50°   | 341.5  | 18.8      |
| 50°-60°   | 289.9  | 16.0      |
| 60°-70°   | 195.5  | 10.8      |
| 70°-80°   | 85.9   | 4.7       |
| 80°-90°   | 14.0   | 0.8       |
| 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°    | 547.4  | 30.2      |
| 0°-40°    | 888.3  | 48.9      |
| 0°-60°    | 1519.7 | 83.7      |
| 0°-90°    | 1815.0 | 100.0     |
| 90°-120°  | 0.0    | 0.0       |
| 90°-150°  | 0.0    | 0.0       |
| 90°-180°  | 0.0    | 0.0       |
| 0°-180°   | 1815.0 | 100.0     |

**CANDELA DISTRIBUTION:**

|     | 0°  | 22.5° | 45° | 67.5° | 90° | Flux |
|-----|-----|-------|-----|-------|-----|------|
| 0°  | 720 | 720   | 720 | 720   | 720 |      |
| 5°  | 715 | 713   | 715 | 713   | 730 | 67   |
| 15° | 685 | 677   | 681 | 684   | 685 | 191  |
| 25° | 612 | 615   | 626 | 634   | 632 | 283  |
| 35° | 533 | 534   | 547 | 559   | 559 | 331  |
| 45° | 429 | 437   | 444 | 455   | 444 | 332  |
| 55° | 320 | 318   | 327 | 324   | 324 | 285  |
| 65° | 197 | 194   | 202 | 194   | 195 | 196  |
| 75° | 82  | 80    | 82  | 76    | 79  | 88   |
| 85° | 10  | 10    | 10  | 10    | 9   | 15   |
| 90° | 0   | 0     | 0   | 0     | 0   |      |



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**CANDELA DISTRIBUTION (FULL):**

|       | 0°    | 22.5° | 45°   | 67.5° | 90°   |
|-------|-------|-------|-------|-------|-------|
| 0°    | 720.1 | 720.1 | 720.1 | 720.1 | 720.1 |
| 2.5°  | 726.4 | 720.9 | 715.8 | 721.7 | 725.4 |
| 5°    | 715.0 | 713.4 | 715.3 | 713.2 | 730.4 |
| 7.5°  | 700.3 | 706.8 | 710.5 | 708.2 | 709.2 |
| 10°   | 692.5 | 690.3 | 698.6 | 704.3 | 703.5 |
| 12.5° | 684.2 | 687.5 | 688.0 | 694.2 | 694.8 |
| 15°   | 684.6 | 676.7 | 680.9 | 684.4 | 684.7 |
| 17.5° | 658.0 | 666.6 | 669.5 | 677.6 | 667.5 |
| 20°   | 654.8 | 648.5 | 654.8 | 663.1 | 661.8 |
| 22.5° | 634.8 | 627.8 | 641.2 | 648.5 | 648.1 |
| 25°   | 612.1 | 615.4 | 625.5 | 633.7 | 632.4 |
| 27.5° | 592.2 | 596.1 | 610.4 | 621.7 | 614.4 |
| 30°   | 576.9 | 574.9 | 587.0 | 597.0 | 602.6 |
| 32.5° | 549.4 | 556.5 | 570.6 | 580.6 | 575.3 |
| 35°   | 532.8 | 534.4 | 546.7 | 559.4 | 559.0 |
| 37.5° | 503.7 | 511.0 | 528.4 | 532.0 | 528.7 |
| 40°   | 478.9 | 486.2 | 501.9 | 505.7 | 504.1 |
| 42.5° | 460.5 | 461.8 | 475.3 | 479.7 | 472.7 |
| 45°   | 428.6 | 436.6 | 443.9 | 455.3 | 444.5 |
| 47.5° | 401.5 | 405.2 | 420.8 | 423.9 | 418.2 |
| 50°   | 376.9 | 378.2 | 393.9 | 390.1 | 386.3 |
| 52.5° | 345.9 | 351.4 | 360.2 | 359.5 | 355.1 |
| 55°   | 320.4 | 318.3 | 326.6 | 324.4 | 324.3 |
| 57.5° | 289.8 | 293.5 | 300.4 | 296.9 | 291.2 |
| 60°   | 261.2 | 261.3 | 263.8 | 259.8 | 259.0 |
| 62.5° | 229.3 | 230.4 | 231.0 | 226.0 | 234.0 |
| 65°   | 196.8 | 194.2 | 201.9 | 194.1 | 195.4 |
| 67.5° | 167.0 | 168.3 | 167.6 | 162.7 | 164.6 |
| 70°   | 136.7 | 138.4 | 137.1 | 131.7 | 133.3 |
| 72.5° | 109.0 | 106.9 | 108.2 | 101.4 | 104.5 |
| 75°   | 81.9  | 80.2  | 81.7  | 76.0  | 78.6  |
| 77.5° | 55.8  | 57.1  | 56.2  | 53.1  | 54.9  |
| 80°   | 36.8  | 35.8  | 35.8  | 34.0  | 34.4  |
| 82.5° | 21.5  | 20.5  | 20.2  | 19.6  | 20.5  |
| 85°   | 10.0  | 9.8   | 9.9   | 9.7   | 9.3   |
| 87.5° | 3.6   | 3.7   | 3.7   | 3.5   | 3.3   |
| 90°   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |

(END OF REPORT)