

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: P561118

Luminaire Tested: FSR-12-4-LD4-1LO-50-UNV-82-97-EDD-90

Issue Date: 7/20/2021

**Test Information**

Test Method: LM-79-2019  
Report Number: P561118  
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-LD4-1LO-50-UNV-82-97-EDD-90  
Description: 1X4 FSR TROFFER WITH .187 CLEAR PC FIXTURE SIDE AND .375 CLEAR TEMPERED GLASS ENVIRONMENTAL SIDE LENSES WITH, 90 CRI AND 5000K CCT LEDS  
Light Source: -  
Ballast/Driver: -

**Summary**

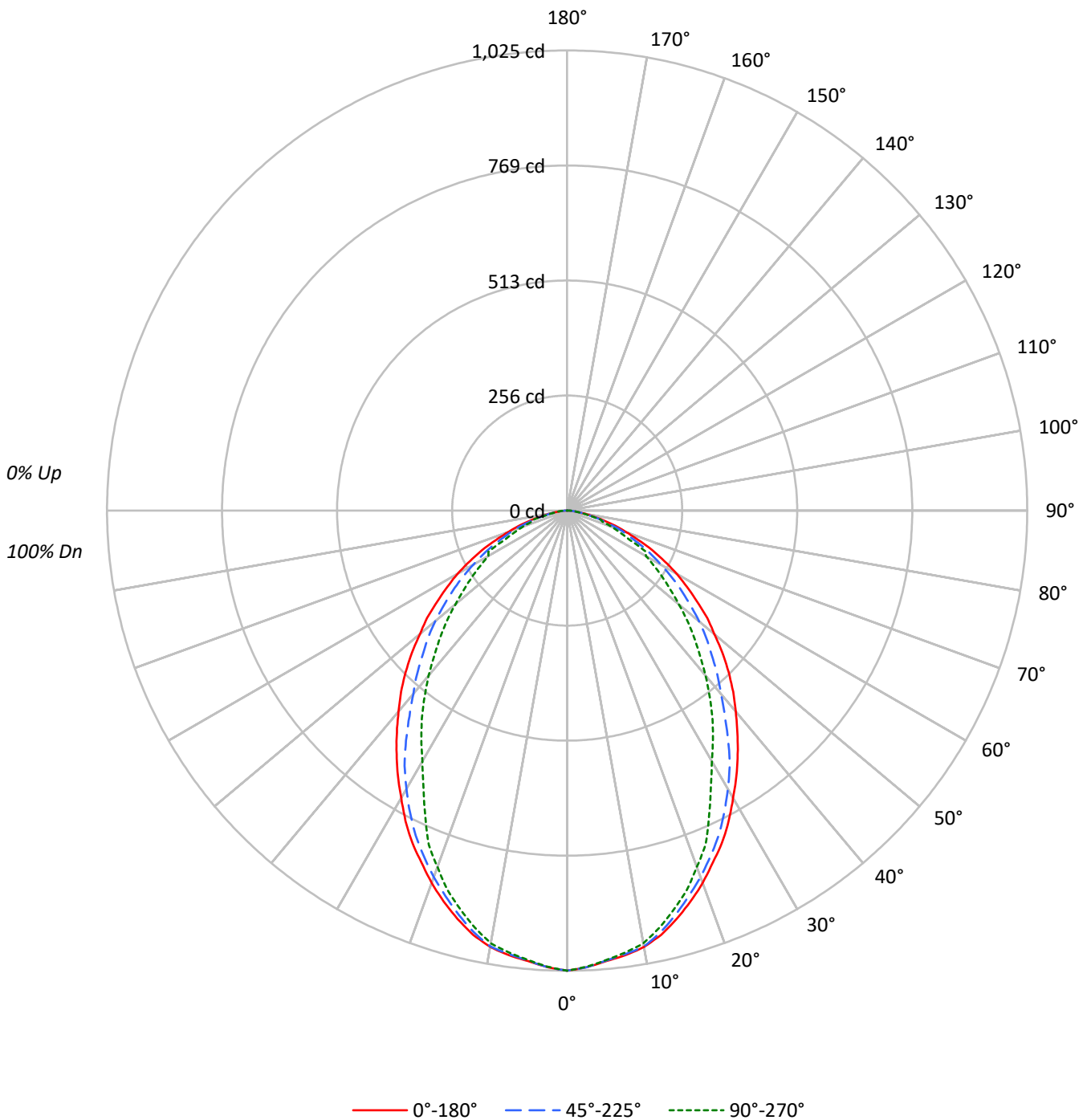
Lumens per Lamp: N/A  
Luminaire Lumens: 2012.0 lumens  
Efficiency: N/A  
Efficacy: 86.0 lumens/watt  
Spacing Criteria (0/90/45): 1.1 / 1 / 1.15  
Luminous Opening: Rectangular (W 1' x L: 4' x H: 0')  
CIE Type: Direct  
  
Input Watts (W): 23.4  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage 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 | 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°  | 2758 | 2758 | 2758 |
| 5°  | 2720 | 2717 | 2714 |
| 10° | 2697 | 2694 | 2674 |
| 15° | 2624 | 2598 | 2561 |
| 20° | 2528 | 2487 | 2419 |
| 25° | 2424 | 2371 | 2223 |
| 30° | 2297 | 2224 | 2003 |
| 35° | 2176 | 2055 | 1853 |
| 40° | 2052 | 1873 | 1686 |
| 45° | 1934 | 1732 | 1524 |
| 50° | 1791 | 1607 | 1359 |
| 55° | 1657 | 1456 | 1217 |
| 60° | 1518 | 1301 | 1090 |
| 65° | 1335 | 1139 | 966  |
| 70° | 1100 | 998  | 821  |
| 75° | 874  | 764  | 801  |
| 80° | 587  | 550  | 514  |
| 85° | 364  | 438  | 513  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 1934 cd/sqm



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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 95.4   | 4.7       |
| 10°-20°   | 261.8  | 13.0      |
| 20°-30°   | 362.5  | 18.0      |
| 30°-40°   | 386.5  | 19.2      |
| 40°-50°   | 352.6  | 17.5      |
| 50°-60°   | 276.2  | 13.7      |
| 60°-70°   | 180.0  | 8.9       |
| 70°-80°   | 79.8   | 4.0       |
| 80°-90°   | 17.1   | 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°    | 719.7  | 35.8      |
| 0°-40°    | 1106.2 | 55.0      |
| 0°-60°    | 1735.1 | 86.2      |
| 0°-90°    | 2012.0 | 100.0     |
| 90°-120°  | 0.0    | 0.0       |
| 90°-150°  | 0.0    | 0.0       |
| 90°-180°  | 0.0    | 0.0       |
| 0°-180°   | 2012.0 | 100.0     |

**CANDELA DISTRIBUTION:**

|     | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|-----|------|-------|------|-------|------|------|
| 0°  | 1025 | 1025  | 1025 | 1025  | 1025 |      |
| 5°  | 1007 | 1006  | 1006 | 1005  | 1005 | 96   |
| 15° | 942  | 942   | 932  | 923   | 919  | 265  |
| 25° | 816  | 812   | 799  | 770   | 749  | 375  |
| 35° | 662  | 658   | 626  | 578   | 564  | 414  |
| 45° | 508  | 498   | 455  | 417   | 400  | 392  |
| 55° | 353  | 342   | 310  | 274   | 260  | 317  |
| 65° | 210  | 198   | 179  | 182   | 152  | 207  |
| 75° | 84   | 78    | 74   | 70    | 77   | 90   |
| 85° | 12   | 13    | 14   | 15    | 17   | 16   |
| 90° | 0    | 0     | 0    | 0     | 0    |      |



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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|-------|--------|--------|--------|--------|--------|
| 0°    | 1024.9 | 1024.9 | 1024.9 | 1024.9 | 1024.9 |
| 2.5°  | 1017.8 | 1017.8 | 1017.8 | 1016.6 | 1016.6 |
| 5°    | 1007.1 | 1005.9 | 1005.9 | 1004.7 | 1004.7 |
| 7.5°  | 998.8  | 997.6  | 996.4  | 995.3  | 992.9  |
| 10°   | 987.0  | 987.0  | 985.8  | 979.9  | 978.7  |
| 12.5° | 968.0  | 966.8  | 962.1  | 953.8  | 951.4  |
| 15°   | 941.9  | 941.9  | 932.5  | 923.0  | 919.4  |
| 17.5° | 913.5  | 912.3  | 900.5  | 891.0  | 886.3  |
| 20°   | 882.7  | 880.3  | 868.5  | 853.1  | 844.8  |
| 22.5° | 848.3  | 848.3  | 834.1  | 814.0  | 805.7  |
| 25°   | 816.4  | 811.6  | 798.6  | 770.1  | 748.8  |
| 27.5° | 779.6  | 772.5  | 758.3  | 718.0  | 693.1  |
| 30°   | 739.3  | 735.8  | 715.6  | 663.5  | 644.6  |
| 32.5° | 701.4  | 695.5  | 674.2  | 619.7  | 604.3  |
| 35°   | 662.3  | 657.6  | 625.6  | 578.2  | 564.0  |
| 37.5° | 623.2  | 617.3  | 577.0  | 539.1  | 521.3  |
| 40°   | 584.1  | 577.0  | 533.2  | 498.8  | 479.9  |
| 42.5° | 547.4  | 537.9  | 495.3  | 458.5  | 437.2  |
| 45°   | 508.3  | 497.6  | 455.0  | 417.1  | 400.5  |
| 47.5° | 469.2  | 459.7  | 420.6  | 381.5  | 362.6  |
| 50°   | 427.7  | 419.4  | 383.9  | 344.8  | 324.6  |
| 52.5° | 393.4  | 380.3  | 346.0  | 306.9  | 290.3  |
| 55°   | 353.1  | 342.4  | 310.4  | 273.7  | 259.5  |
| 57.5° | 316.4  | 305.7  | 276.1  | 241.7  | 229.9  |
| 60°   | 282.0  | 266.6  | 241.7  | 212.1  | 202.6  |
| 62.5° | 244.1  | 232.2  | 210.9  | 186.0  | 197.9  |
| 65°   | 209.7  | 197.9  | 178.9  | 182.5  | 151.7  |
| 67.5° | 171.8  | 165.9  | 149.3  | 132.7  | 128.0  |
| 70°   | 139.8  | 132.7  | 126.8  | 109.0  | 104.3  |
| 72.5° | 111.4  | 104.3  | 96.0   | 86.5   | 82.9   |
| 75°   | 84.1   | 78.2   | 73.5   | 69.9   | 77.0   |
| 77.5° | 58.1   | 55.7   | 52.1   | 48.6   | 47.4   |
| 80°   | 37.9   | 36.7   | 35.5   | 34.4   | 33.2   |
| 82.5° | 22.5   | 22.5   | 22.5   | 22.5   | 22.5   |
| 85°   | 11.8   | 13.0   | 14.2   | 15.4   | 16.6   |
| 87.5° | 7.1    | 7.1    | 8.3    | 9.5    | 10.7   |
| 90°   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |

(END OF REPORT)