

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: P562232

Luminaire Tested: FSR-24-4-LD4-1LO-50-UNV-80-88-EDD-90

Issue Date: 7/20/2021

**Test Information**

Test Method: LM-79-2019  
Report Number: P562232  
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-LD4-1LO-50-UNV-80-88-EDD-90  
Description: 2X4 FSR TROFFER WITH .125 PRISMATIC ACRYLIC FIXTURE SIDE AND .500 CLEAR PC ENVIRONMENTAL SIDE LENSES WITH, 90 CRI AND 5000K CCT LEDS  
Light Source: -  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 2199.0 lumens  
Efficiency: N/A  
Efficacy: 94.0 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

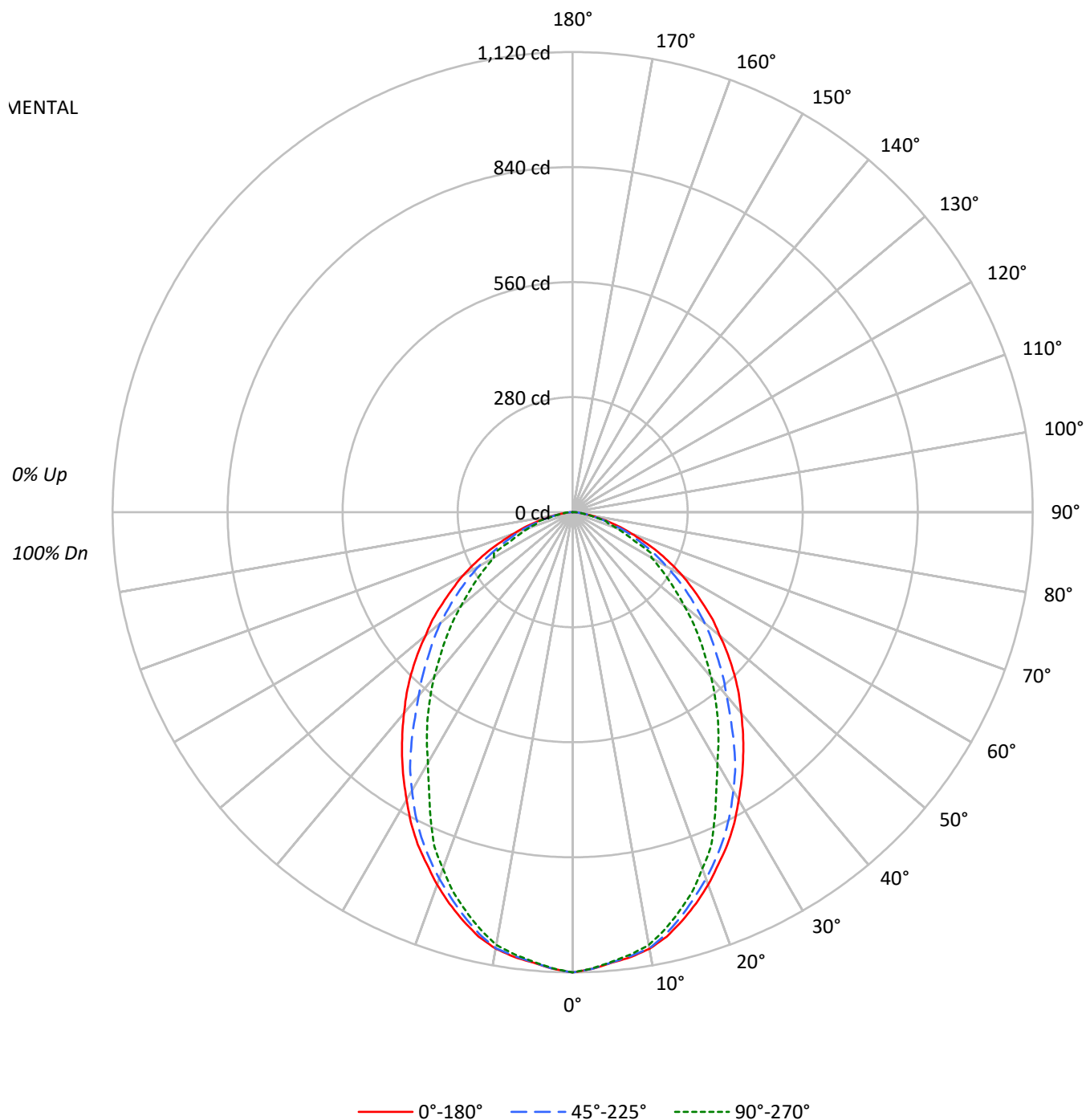
Input Watts (W): 23.4  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT



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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  |     |     |  |  | 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°  | 1507 | 1507 | 1507 |
| 5°  | 1487 | 1485 | 1483 |
| 10° | 1474 | 1472 | 1461 |
| 15° | 1434 | 1420 | 1400 |
| 20° | 1381 | 1359 | 1322 |
| 25° | 1325 | 1296 | 1215 |
| 30° | 1255 | 1215 | 1095 |
| 35° | 1189 | 1123 | 1012 |
| 40° | 1121 | 1023 | 921  |
| 45° | 1057 | 946  | 833  |
| 50° | 979  | 878  | 743  |
| 55° | 905  | 796  | 665  |
| 60° | 829  | 711  | 596  |
| 65° | 730  | 622  | 528  |
| 70° | 601  | 545  | 448  |
| 75° | 478  | 417  | 438  |
| 80° | 321  | 301  | 281  |
| 85° | 199  | 239  | 279  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle:  $0^\circ$ 

Vertical Angle:  $45^\circ$

Luminance: 1057 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 104.3  | 4.7       |
| 10°-20°   | 286.2  | 13.0      |
| 20°-30°   | 396.2  | 18.0      |
| 30°-40°   | 422.4  | 19.2      |
| 40°-50°   | 385.4  | 17.5      |
| 50°-60°   | 301.9  | 13.7      |
| 60°-70°   | 196.8  | 8.9       |
| 70°-80°   | 87.2   | 4.0       |
| 80°-90°   | 18.7   | 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°    | 786.6  | 35.8      |
| 0°-40°    | 1209.0 | 55.0      |
| 0°-60°    | 1896.3 | 86.2      |
| 0°-90°    | 2199.0 | 100.0     |
| 90°-120°  | 0.0    | 0.0       |
| 90°-150°  | 0.0    | 0.0       |
| 90°-180°  | 0.0    | 0.0       |
| 0°-180°   | 2199.0 | 100.0     |

**CANDELA DISTRIBUTION:**

|     | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|-----|------|-------|------|-------|------|------|
| 0°  | 1120 | 1120  | 1120 | 1120  | 1120 |      |
| 5°  | 1101 | 1099  | 1099 | 1098  | 1098 | 104  |
| 15° | 1030 | 1030  | 1019 | 1009  | 1005 | 289  |
| 25° | 892  | 887   | 873  | 842   | 818  | 410  |
| 35° | 724  | 719   | 684  | 632   | 616  | 453  |
| 45° | 556  | 544   | 497  | 456   | 438  | 428  |
| 55° | 386  | 374   | 339  | 299   | 284  | 346  |
| 65° | 229  | 216   | 196  | 199   | 166  | 226  |
| 75° | 92   | 86    | 80   | 76    | 84   | 99   |
| 85° | 13   | 14    | 16   | 17    | 18   | 18   |
| 90° | 0    | 0     | 0    | 0     | 0    |      |

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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|-------|--------|--------|--------|--------|--------|
| 0°    | 1120.1 | 1120.1 | 1120.1 | 1120.1 | 1120.1 |
| 2.5°  | 1112.4 | 1112.4 | 1112.4 | 1111.1 | 1111.1 |
| 5°    | 1100.7 | 1099.4 | 1099.4 | 1098.1 | 1098.1 |
| 7.5°  | 1091.7 | 1090.4 | 1089.1 | 1087.8 | 1085.2 |
| 10°   | 1078.7 | 1078.7 | 1077.4 | 1070.9 | 1069.6 |
| 12.5° | 1058.0 | 1056.7 | 1051.5 | 1042.4 | 1039.9 |
| 15°   | 1029.5 | 1029.5 | 1019.1 | 1008.8 | 1004.9 |
| 17.5° | 998.4  | 997.1  | 984.2  | 973.8  | 968.6  |
| 20°   | 964.7  | 962.2  | 949.2  | 932.4  | 923.3  |
| 22.5° | 927.2  | 927.2  | 911.7  | 889.6  | 880.6  |
| 25°   | 892.2  | 887.0  | 872.8  | 841.7  | 818.4  |
| 27.5° | 852.1  | 844.3  | 828.8  | 784.7  | 757.6  |
| 30°   | 808.1  | 804.2  | 782.2  | 725.2  | 704.5  |
| 32.5° | 766.6  | 760.1  | 736.8  | 677.3  | 660.4  |
| 35°   | 723.9  | 718.7  | 683.7  | 631.9  | 616.4  |
| 37.5° | 681.1  | 674.7  | 630.6  | 589.2  | 569.8  |
| 40°   | 638.4  | 630.6  | 582.7  | 545.2  | 524.5  |
| 42.5° | 598.3  | 587.9  | 541.3  | 501.1  | 477.8  |
| 45°   | 555.5  | 543.9  | 497.3  | 455.8  | 437.7  |
| 47.5° | 512.8  | 502.4  | 459.7  | 417.0  | 396.3  |
| 50°   | 467.5  | 458.4  | 419.6  | 376.8  | 354.8  |
| 52.5° | 429.9  | 415.7  | 378.1  | 335.4  | 317.3  |
| 55°   | 385.9  | 374.2  | 339.3  | 299.1  | 283.6  |
| 57.5° | 345.8  | 334.1  | 301.7  | 264.2  | 251.2  |
| 60°   | 308.2  | 291.4  | 264.2  | 231.8  | 221.4  |
| 62.5° | 266.8  | 253.8  | 230.5  | 203.3  | 216.3  |
| 65°   | 229.2  | 216.3  | 195.5  | 199.4  | 165.8  |
| 67.5° | 187.8  | 181.3  | 163.2  | 145.0  | 139.9  |
| 70°   | 152.8  | 145.0  | 138.6  | 119.1  | 114.0  |
| 72.5° | 121.7  | 114.0  | 104.9  | 94.5   | 90.6   |
| 75°   | 91.9   | 85.5   | 80.3   | 76.4   | 84.2   |
| 77.5° | 63.5   | 60.9   | 57.0   | 53.1   | 51.8   |
| 80°   | 41.4   | 40.1   | 38.8   | 37.6   | 36.3   |
| 82.5° | 24.6   | 24.6   | 24.6   | 24.6   | 24.6   |
| 85°   | 12.9   | 14.2   | 15.5   | 16.8   | 18.1   |
| 87.5° | 7.8    | 7.8    | 9.1    | 10.4   | 11.7   |
| 90°   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |

(END OF REPORT)