

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: P561168

Luminaire Tested: FSR-12-4-LD4-1STD-35-UNV-82-84-EDD-90

Issue Date: 7/20/2021

**Test Information**

Test Method: LM-79-2019  
Report Number: P561168  
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-LD4-1STD-35-UNV-82-84-EDD-90  
Description: 1X4 FSR TROFFER WITH .187 CLEAR PC FIXTURE SIDE AND .125 CLEAR PC ENVIRONMENTAL SI  
LENSES WITH, 90 CRI AND 3500K CCT LEDS  
Light Source: -  
Ballast/Driver: -

**Summary**

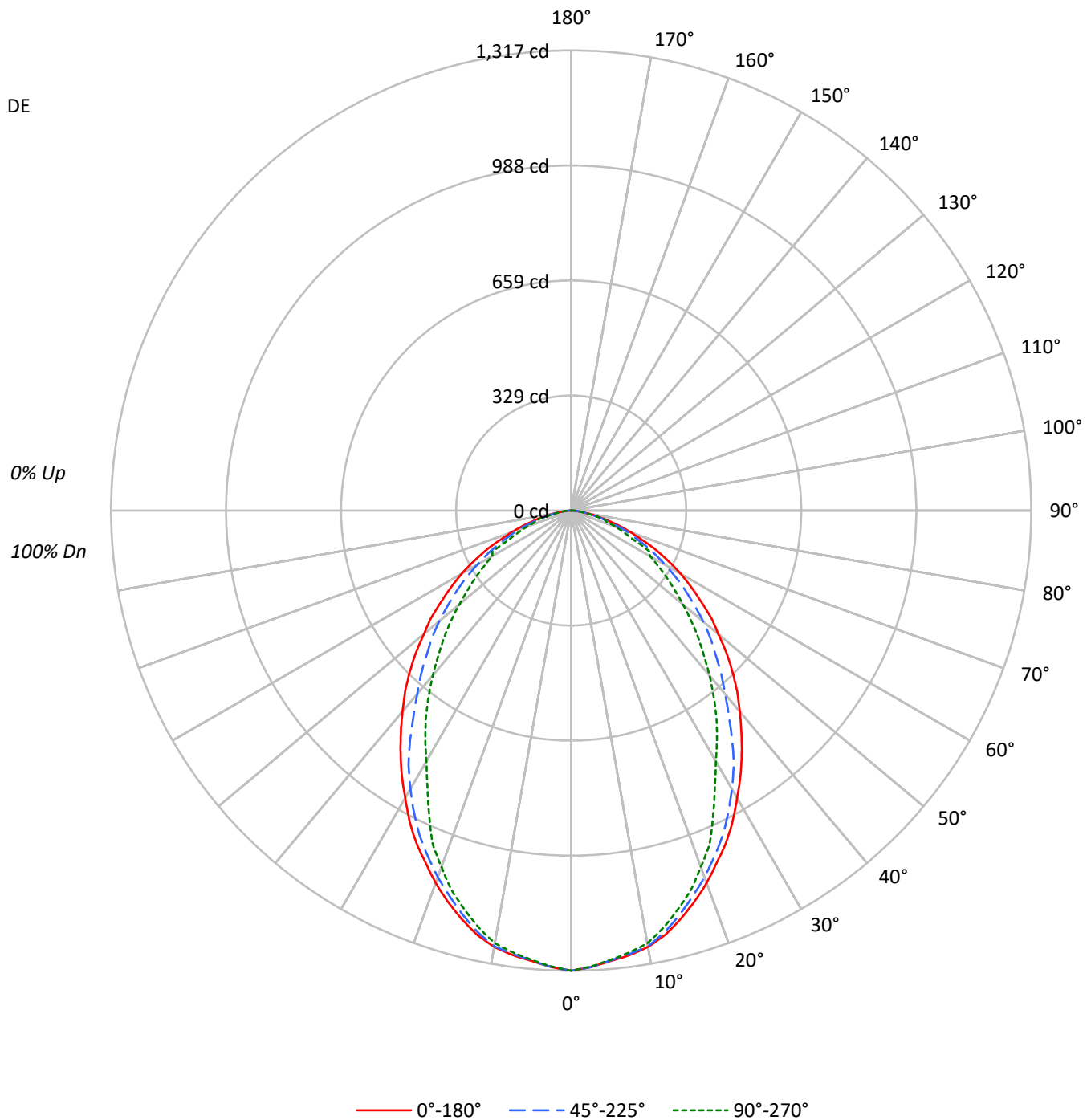
Lumens per Lamp: N/A  
Luminaire Lumens: 2585.0 lumens  
Efficiency: N/A  
Efficacy: 77.6 lumens/watt  
Spacing Criteria (0/90/45): 1.1 / 1 / 1.15  
Luminous Opening: Rectangular (W 1' x L: 4' x H: 0')  
CIE Type: Direct  
  
Input Watts (W): 33.3  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage 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 | 106 | 102 | 99  | 108 | 104 | 100 | 97  | 100 | 97  | 94  | 96  | 94  | 91  | 92  | 90  | 89  | 87  |    |    |    |    | 87  |   |  |   |
| 2   | 101 | 94  | 88  | 83  | 99  | 92  | 87  | 82  | 89  | 84  | 80  | 86  | 82  | 78  | 83  | 79  | 77  | 75  |    |    |    |    | 75  |   |  |   |
| 3   | 93  | 84  | 77  | 71  | 91  | 82  | 76  | 70  | 79  | 74  | 69  | 77  | 72  | 68  | 74  | 70  | 67  | 65  |    |    |    |    | 65  |   |  |   |
| 4   | 86  | 75  | 67  | 61  | 84  | 74  | 66  | 61  | 72  | 65  | 60  | 69  | 64  | 59  | 67  | 62  | 58  | 56  |    |    |    |    | 56  |   |  |   |
| 5   | 80  | 68  | 60  | 54  | 78  | 67  | 59  | 53  | 65  | 58  | 53  | 63  | 57  | 52  | 61  | 56  | 52  | 50  |    |    |    |    | 50  |   |  |   |
| 6   | 74  | 62  | 53  | 48  | 72  | 61  | 53  | 47  | 59  | 52  | 47  | 57  | 51  | 47  | 56  | 50  | 46  | 44  |    |    |    |    | 44  |   |  |   |
| 7   | 69  | 56  | 48  | 43  | 67  | 56  | 48  | 42  | 54  | 47  | 42  | 53  | 46  | 42  | 51  | 46  | 42  | 40  |    |    |    |    | 40  |   |  |   |
| 8   | 65  | 52  | 44  | 38  | 63  | 51  | 44  | 38  | 50  | 43  | 38  | 49  | 42  | 38  | 48  | 42  | 38  | 36  |    |    |    |    | 36  |   |  |   |
| 9   | 61  | 48  | 40  | 35  | 59  | 47  | 40  | 35  | 46  | 39  | 35  | 45  | 39  | 34  | 44  | 38  | 34  | 33  |    |    |    |    | 33  |   |  |   |
| 10  | 57  | 44  | 37  | 32  | 56  | 44  | 37  | 32  | 43  | 36  | 32  | 42  | 36  | 32  | 41  | 36  | 32  | 30  |    |    |    |    | 30  |   |  |   |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 3543 | 3543 | 3543 |
| 5°  | 3495 | 3491 | 3487 |
| 10° | 3465 | 3461 | 3436 |
| 15° | 3372 | 3338 | 3291 |
| 20° | 3248 | 3195 | 3108 |
| 25° | 3114 | 3046 | 2857 |
| 30° | 2952 | 2857 | 2573 |
| 35° | 2795 | 2641 | 2380 |
| 40° | 2636 | 2406 | 2166 |
| 45° | 2485 | 2225 | 1958 |
| 50° | 2300 | 2065 | 1746 |
| 55° | 2128 | 1871 | 1564 |
| 60° | 1950 | 1671 | 1401 |
| 65° | 1715 | 1464 | 1241 |
| 70° | 1413 | 1282 | 1054 |
| 75° | 1124 | 981  | 1028 |
| 80° | 755  | 708  | 660  |
| 85° | 469  | 565  | 658  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 2485 cd/sqm



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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 122.6  | 4.7       |
| 10°-20°   | 336.4  | 13.0      |
| 20°-30°   | 465.7  | 18.0      |
| 30°-40°   | 496.6  | 19.2      |
| 40°-50°   | 453.0  | 17.5      |
| 50°-60°   | 354.9  | 13.7      |
| 60°-70°   | 231.3  | 8.9       |
| 70°-80°   | 102.5  | 4.0       |
| 80°-90°   | 22.0   | 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°    | 924.7  | 35.8      |
| 0°-40°    | 1421.3 | 55.0      |
| 0°-60°    | 2229.2 | 86.2      |
| 0°-90°    | 2585.0 | 100.0     |
| 90°-120°  | 0.0    | 0.0       |
| 90°-150°  | 0.0    | 0.0       |
| 90°-180°  | 0.0    | 0.0       |
| 0°-180°   | 2585.0 | 100.0     |

**CANDELA DISTRIBUTION:**

|     | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|-----|------|-------|------|-------|------|------|
| 0°  | 1317 | 1317  | 1317 | 1317  | 1317 |      |
| 5°  | 1294 | 1292  | 1292 | 1291  | 1291 | 123  |
| 15° | 1210 | 1210  | 1198 | 1186  | 1181 | 340  |
| 25° | 1049 | 1043  | 1026 | 990   | 962  | 482  |
| 35° | 851  | 845   | 804  | 743   | 725  | 532  |
| 45° | 653  | 639   | 585  | 536   | 514  | 503  |
| 55° | 454  | 440   | 399  | 352   | 333  | 407  |
| 65° | 269  | 254   | 230  | 234   | 195  | 266  |
| 75° | 108  | 100   | 94   | 90    | 99   | 116  |
| 85° | 15   | 17    | 18   | 20    | 21   | 21   |
| 90° | 0    | 0     | 0    | 0     | 0    |      |



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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|-------|--------|--------|--------|--------|--------|
| 0°    | 1316.8 | 1316.8 | 1316.8 | 1316.8 | 1316.8 |
| 2.5°  | 1307.6 | 1307.6 | 1307.6 | 1306.1 | 1306.1 |
| 5°    | 1293.9 | 1292.4 | 1292.4 | 1290.9 | 1290.9 |
| 7.5°  | 1283.3 | 1281.8 | 1280.2 | 1278.7 | 1275.7 |
| 10°   | 1268.1 | 1268.1 | 1266.5 | 1258.9 | 1257.4 |
| 12.5° | 1243.7 | 1242.2 | 1236.1 | 1225.4 | 1222.4 |
| 15°   | 1210.2 | 1210.2 | 1198.0 | 1185.8 | 1181.3 |
| 17.5° | 1173.7 | 1172.1 | 1156.9 | 1144.7 | 1138.7 |
| 20°   | 1134.1 | 1131.0 | 1115.8 | 1096.0 | 1085.4 |
| 22.5° | 1089.9 | 1089.9 | 1071.7 | 1045.8 | 1035.1 |
| 25°   | 1048.8 | 1042.8 | 1026.0 | 989.5  | 962.1  |
| 27.5° | 1001.7 | 992.5  | 974.3  | 922.5  | 890.5  |
| 30°   | 949.9  | 945.3  | 919.5  | 852.5  | 828.1  |
| 32.5° | 901.2  | 893.6  | 866.2  | 796.1  | 776.4  |
| 35°   | 850.9  | 844.9  | 803.8  | 742.9  | 724.6  |
| 37.5° | 800.7  | 793.1  | 741.3  | 692.6  | 669.8  |
| 40°   | 750.5  | 741.3  | 685.0  | 640.9  | 616.5  |
| 42.5° | 703.3  | 691.1  | 636.3  | 589.1  | 561.7  |
| 45°   | 653.1  | 639.4  | 584.6  | 535.8  | 514.5  |
| 47.5° | 602.8  | 590.6  | 540.4  | 490.2  | 465.8  |
| 50°   | 549.5  | 538.9  | 493.2  | 443.0  | 417.1  |
| 52.5° | 505.4  | 488.6  | 444.5  | 394.3  | 373.0  |
| 55°   | 453.6  | 439.9  | 398.8  | 351.6  | 333.4  |
| 57.5° | 406.4  | 392.7  | 354.7  | 310.5  | 295.3  |
| 60°   | 362.3  | 342.5  | 310.5  | 272.5  | 260.3  |
| 62.5° | 313.6  | 298.4  | 271.0  | 239.0  | 254.2  |
| 65°   | 269.4  | 254.2  | 229.9  | 234.4  | 194.9  |
| 67.5° | 220.7  | 213.1  | 191.8  | 170.5  | 164.4  |
| 70°   | 179.6  | 170.5  | 162.9  | 140.0  | 134.0  |
| 72.5° | 143.1  | 134.0  | 123.3  | 111.1  | 106.6  |
| 75°   | 108.1  | 100.5  | 94.4   | 89.8   | 98.9   |
| 77.5° | 74.6   | 71.5   | 67.0   | 62.4   | 60.9   |
| 80°   | 48.7   | 47.2   | 45.7   | 44.1   | 42.6   |
| 82.5° | 28.9   | 28.9   | 28.9   | 28.9   | 28.9   |
| 85°   | 15.2   | 16.7   | 18.3   | 19.8   | 21.3   |
| 87.5° | 9.1    | 9.1    | 10.7   | 12.2   | 13.7   |
| 90°   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |

(END OF REPORT)