

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: P562611

Luminaire Tested: FSR-24-4-LD4-2HI-50-UNV-80-85-EDD

Issue Date: 7/20/2021

**Test Information**

Test Method: LM-79-2019  
Report Number: P562611  
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-LD4-2HI-50-UNV-80-85-EDD  
Description: 2X4 FSR TROFFER WITH .125 PRISMATIC ACRYLIC FIXTURE SIDE AND .187 CLEAR PC ENVIRON  
SIDE LENSES WITH, 80 CRI AND 5000K CCT LEDS  
Light Source: -  
Ballast/Driver: -

**Summary**

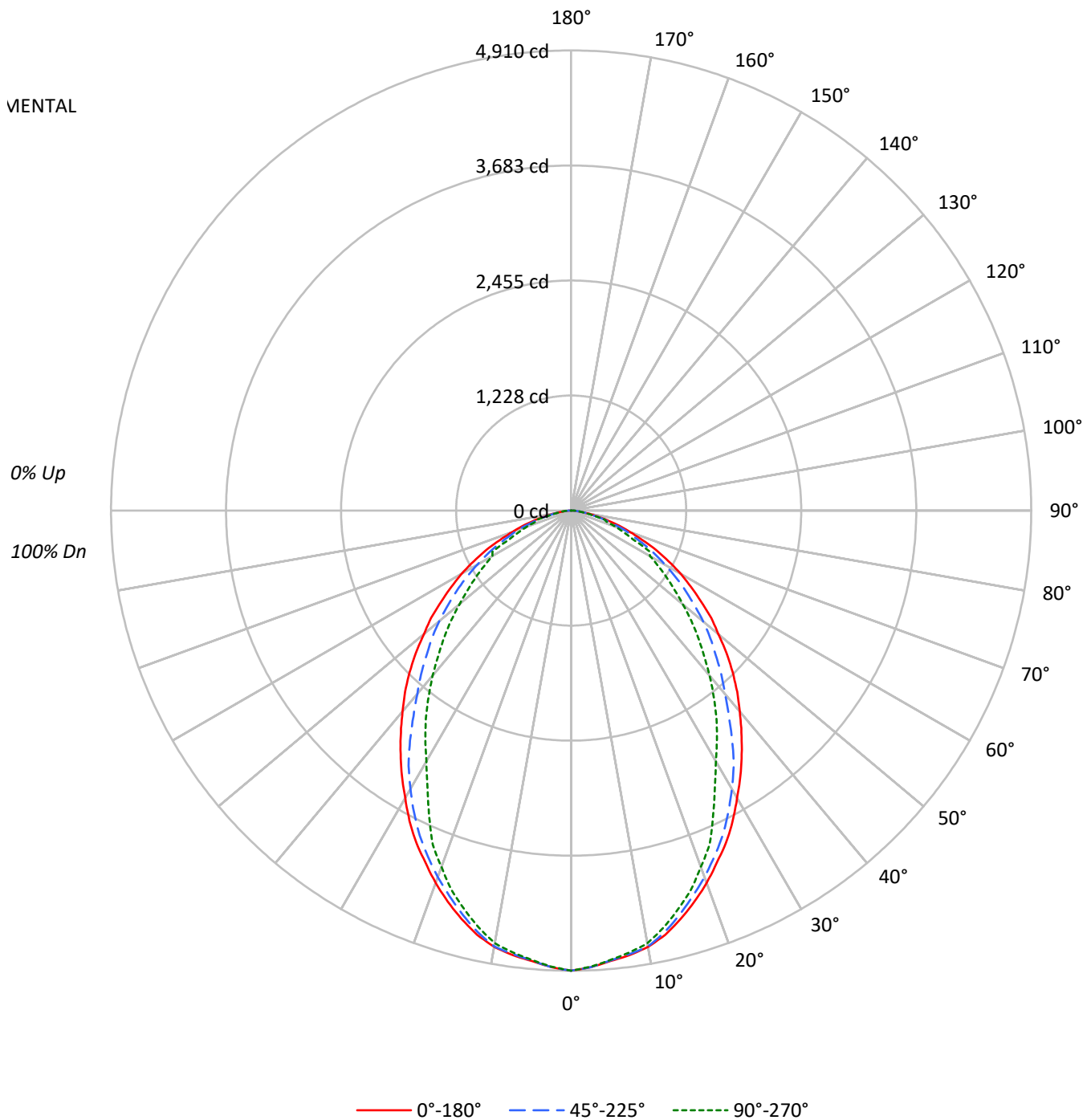
Lumens per Lamp: N/A  
Luminaire Lumens: 9638.0 lumens  
Efficiency: N/A  
Efficacy: 111.6 lumens/watt  
Spacing Criteria (0/90/45): 1.1 / 1 / 1.15  
Luminous Opening: Rectangular (W 2' x L: 4' x H: 0')  
CIE Type: Direct  
  
Input Watts (W): 86.4  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage 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  | 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 |     |   |  |   |
| 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°  | 6606 | 6606 | 6606 |
| 5°  | 6516 | 6508 | 6501 |
| 10° | 6459 | 6452 | 6405 |
| 15° | 6285 | 6222 | 6135 |
| 20° | 6054 | 5957 | 5794 |
| 25° | 5805 | 5679 | 5325 |
| 30° | 5502 | 5326 | 4797 |
| 35° | 5211 | 4922 | 4437 |
| 40° | 4915 | 4486 | 4037 |
| 45° | 4633 | 4147 | 3650 |
| 50° | 4289 | 3849 | 3255 |
| 55° | 3968 | 3488 | 2916 |
| 60° | 3635 | 3116 | 2612 |
| 65° | 3198 | 2728 | 2313 |
| 70° | 2635 | 2389 | 1965 |
| 75° | 2095 | 1829 | 1918 |
| 80° | 1407 | 1320 | 1231 |
| 85° | 877  | 1051 | 1227 |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 4633 cd/sqm



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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 457.0  | 4.7       |
| 10°-20°   | 1254.2 | 13.0      |
| 20°-30°   | 1736.4 | 18.0      |
| 30°-40°   | 1851.5 | 19.2      |
| 40°-50°   | 1689.1 | 17.5      |
| 50°-60°   | 1323.3 | 13.7      |
| 60°-70°   | 862.4  | 8.9       |
| 70°-80°   | 382.1  | 4.0       |
| 80°-90°   | 82.0   | 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°    | 3447.6 | 35.8      |
| 0°-40°    | 5299.1 | 55.0      |
| 0°-60°    | 8311.4 | 86.2      |
| 0°-90°    | 9638.0 | 100.0     |
| 90°-120°  | 0.0    | 0.0       |
| 90°-150°  | 0.0    | 0.0       |
| 90°-180°  | 0.0    | 0.0       |
| 0°-180°   | 9638.0 | 100.0     |

**CANDELA DISTRIBUTION:**

|     | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|-----|------|-------|------|-------|------|------|
| 0°  | 4910 | 4910  | 4910 | 4910  | 4910 |      |
| 5°  | 4824 | 4819  | 4819 | 4813  | 4813 | 458  |
| 15° | 4512 | 4512  | 4467 | 4421  | 4404 | 1268 |
| 25° | 3910 | 3888  | 3825 | 3689  | 3587 | 1795 |
| 35° | 3173 | 3150  | 2997 | 2770  | 2702 | 1984 |
| 45° | 2435 | 2384  | 2180 | 1998  | 1918 | 1876 |
| 55° | 1691 | 1640  | 1487 | 1311  | 1243 | 1517 |
| 65° | 1005 | 948   | 857  | 874   | 726  | 990  |
| 75° | 403  | 375   | 352  | 335   | 369  | 432  |
| 85° | 57   | 62    | 68   | 74    | 80   | 79   |
| 90° | 0    | 0     | 0    | 0     | 0    |      |



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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|-------|--------|--------|--------|--------|--------|
| 0°    | 4909.5 | 4909.5 | 4909.5 | 4909.5 | 4909.5 |
| 2.5°  | 4875.4 | 4875.4 | 4875.4 | 4869.7 | 4869.7 |
| 5°    | 4824.3 | 4818.7 | 4818.7 | 4813.0 | 4813.0 |
| 7.5°  | 4784.6 | 4778.9 | 4773.3 | 4767.6 | 4756.2 |
| 10°   | 4727.8 | 4727.8 | 4722.2 | 4693.8 | 4688.1 |
| 12.5° | 4637.0 | 4631.4 | 4608.7 | 4568.9 | 4557.6 |
| 15°   | 4512.2 | 4512.2 | 4466.8 | 4421.4 | 4404.3 |
| 17.5° | 4376.0 | 4370.3 | 4313.5 | 4268.1 | 4245.4 |
| 20°   | 4228.4 | 4217.0 | 4160.3 | 4086.5 | 4046.8 |
| 22.5° | 4063.8 | 4063.8 | 3995.7 | 3899.2 | 3859.5 |
| 25°   | 3910.5 | 3887.8 | 3825.4 | 3689.2 | 3587.0 |
| 27.5° | 3734.6 | 3700.5 | 3632.4 | 3439.5 | 3320.3 |
| 30°   | 3541.6 | 3524.6 | 3428.1 | 3178.4 | 3087.6 |
| 32.5° | 3360.0 | 3331.6 | 3229.5 | 2968.4 | 2894.6 |
| 35°   | 3172.7 | 3150.0 | 2996.8 | 2769.7 | 2701.6 |
| 37.5° | 2985.4 | 2957.0 | 2764.1 | 2582.4 | 2497.3 |
| 40°   | 2798.1 | 2764.1 | 2554.1 | 2389.5 | 2298.7 |
| 42.5° | 2622.2 | 2576.8 | 2372.4 | 2196.5 | 2094.3 |
| 45°   | 2434.9 | 2383.8 | 2179.5 | 1997.8 | 1918.4 |
| 47.5° | 2247.6 | 2202.2 | 2014.9 | 1827.6 | 1736.8 |
| 50°   | 2048.9 | 2009.2 | 1838.9 | 1651.6 | 1555.1 |
| 52.5° | 1884.3 | 1821.9 | 1657.3 | 1470.0 | 1390.5 |
| 55°   | 1691.4 | 1640.3 | 1487.0 | 1311.1 | 1243.0 |
| 57.5° | 1515.4 | 1464.3 | 1322.4 | 1157.8 | 1101.1 |
| 60°   | 1350.8 | 1277.0 | 1157.8 | 1015.9 | 970.5  |
| 62.5° | 1169.2 | 1112.4 | 1010.3 | 891.1  | 947.8  |
| 65°   | 1004.6 | 947.8  | 857.0  | 874.1  | 726.5  |
| 67.5° | 823.0  | 794.6  | 715.1  | 635.7  | 613.0  |
| 70°   | 669.7  | 635.7  | 607.3  | 522.2  | 499.5  |
| 72.5° | 533.5  | 499.5  | 459.7  | 414.3  | 397.3  |
| 75°   | 403.0  | 374.6  | 351.9  | 334.9  | 368.9  |
| 77.5° | 278.1  | 266.8  | 249.7  | 232.7  | 227.0  |
| 80°   | 181.6  | 175.9  | 170.3  | 164.6  | 158.9  |
| 82.5° | 107.8  | 107.8  | 107.8  | 107.8  | 107.8  |
| 85°   | 56.8   | 62.4   | 68.1   | 73.8   | 79.5   |
| 87.5° | 34.1   | 34.1   | 39.7   | 45.4   | 51.1   |
| 90°   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |

(END OF REPORT)