

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: P562919

Luminaire Tested: FSR-24-4-LD4-2STD-35-UNV-93-87-EDD

Issue Date: 7/20/2021

**Test Information**

Test Method: LM-79-2019  
Report Number: P562919  
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-LD4-2STD-35-UNV-93-87-EDD  
Description: 2X4 FSR TROFFER WITH .156 CLEAR TEMPERED GLASS FIXTURE SIDE AND .375 CLEAR PC ENVIRONMENTAL SIDE LENSES WITH, 80 CRI AND 3500K CCT LEDS  
Light Source: -  
Ballast/Driver: -

**Summary**

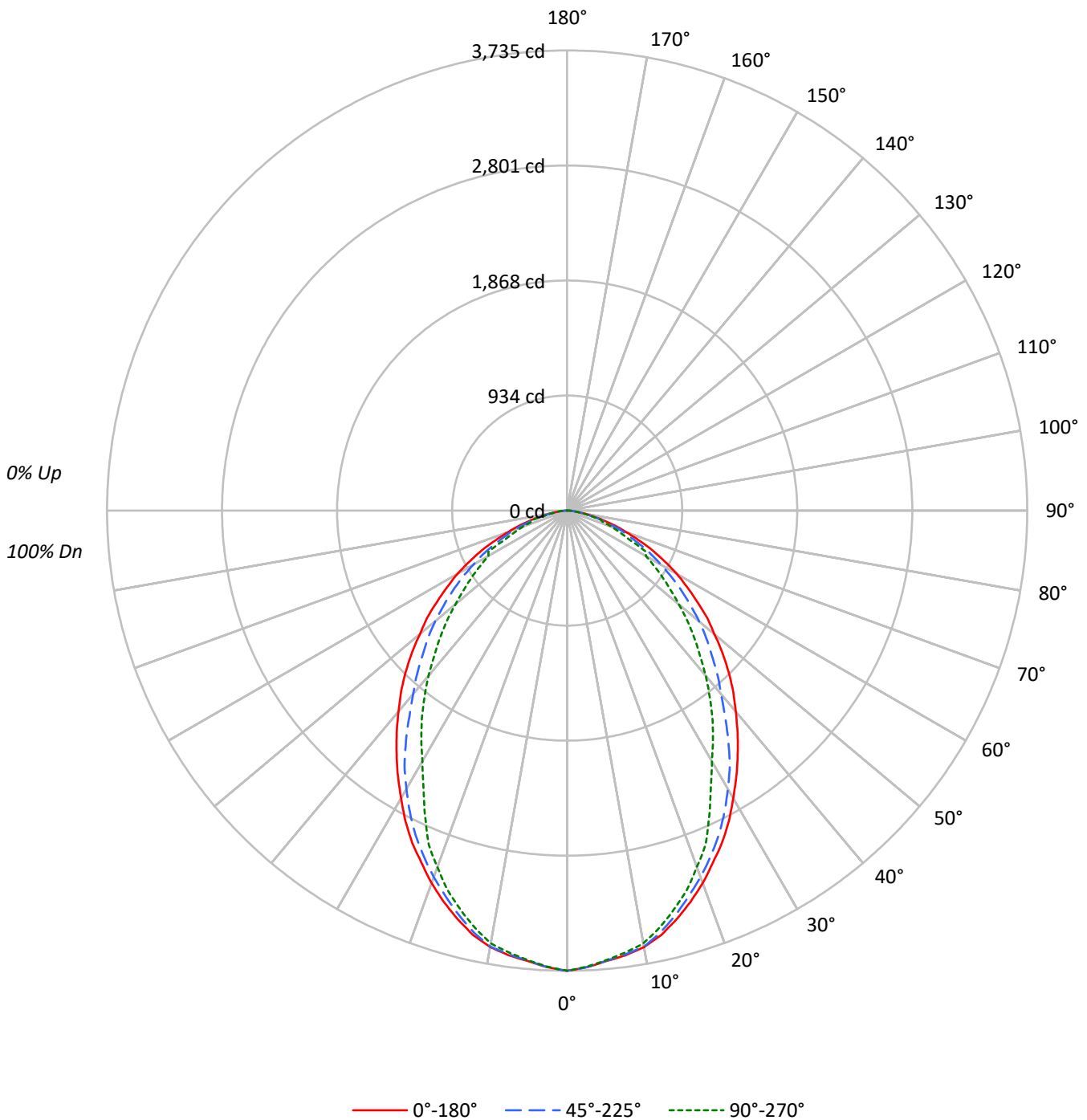
Lumens per Lamp: N/A  
Luminaire Lumens: 7333.0 lumens  
Efficiency: N/A  
Efficacy: 110.1 lumens/watt  
Spacing Criteria (0/90/45): 1.1 / 1 / 1.15  
Luminous Opening: Rectangular (W 2' x L: 4' x H: 0')  
CIE Type: Direct  
  
Input Watts (W): 66.6  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage 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 | 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°  | 5026 | 5026 | 5026 |
| 5°  | 4958 | 4952 | 4946 |
| 10° | 4915 | 4909 | 4873 |
| 15° | 4782 | 4734 | 4668 |
| 20° | 4606 | 4532 | 4409 |
| 25° | 4417 | 4321 | 4052 |
| 30° | 4186 | 4052 | 3650 |
| 35° | 3965 | 3745 | 3376 |
| 40° | 3739 | 3413 | 3072 |
| 45° | 3525 | 3155 | 2777 |
| 50° | 3263 | 2929 | 2477 |
| 55° | 3019 | 2654 | 2218 |
| 60° | 2766 | 2370 | 1987 |
| 65° | 2433 | 2076 | 1760 |
| 70° | 2005 | 1818 | 1495 |
| 75° | 1594 | 1392 | 1459 |
| 80° | 1071 | 1003 | 937  |
| 85° | 667  | 800  | 934  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 3525 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 347.7  | 4.7       |
| 10°-20°   | 954.3  | 13.0      |
| 20°-30°   | 1321.1 | 18.0      |
| 30°-40°   | 1408.7 | 19.2      |
| 40°-50°   | 1285.1 | 17.5      |
| 50°-60°   | 1006.8 | 13.7      |
| 60°-70°   | 656.2  | 8.9       |
| 70°-80°   | 290.7  | 4.0       |
| 80°-90°   | 62.4   | 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°    | 2623.1 | 35.8      |
| 0°-40°    | 4031.8 | 55.0      |
| 0°-60°    | 6323.7 | 86.2      |
| 0°-90°    | 7333.0 | 100.0     |
| 90°-120°  | 0.0    | 0.0       |
| 90°-150°  | 0.0    | 0.0       |
| 90°-180°  | 0.0    | 0.0       |
| 0°-180°   | 7333.0 | 100.0     |

**CANDELA DISTRIBUTION:**

|     | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|-----|------|-------|------|-------|------|------|
| 0°  | 3735 | 3735  | 3735 | 3735  | 3735 |      |
| 5°  | 3671 | 3666  | 3666 | 3662  | 3662 | 348  |
| 15° | 3433 | 3433  | 3398 | 3364  | 3351 | 965  |
| 25° | 2975 | 2958  | 2910 | 2807  | 2729 | 1366 |
| 35° | 2414 | 2397  | 2280 | 2107  | 2056 | 1509 |
| 45° | 1853 | 1814  | 1658 | 1520  | 1460 | 1427 |
| 55° | 1287 | 1248  | 1131 | 998   | 946  | 1154 |
| 65° | 764  | 721   | 652  | 665   | 553  | 753  |
| 75° | 307  | 285   | 268  | 255   | 281  | 329  |
| 85° | 43   | 48    | 52   | 56    | 60   | 60   |
| 90° | 0    | 0     | 0    | 0     | 0    |      |



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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|-------|--------|--------|--------|--------|--------|
| 0°    | 3735.3 | 3735.3 | 3735.3 | 3735.3 | 3735.3 |
| 2.5°  | 3709.4 | 3709.4 | 3709.4 | 3705.1 | 3705.1 |
| 5°    | 3670.6 | 3666.2 | 3666.2 | 3661.9 | 3661.9 |
| 7.5°  | 3640.3 | 3636.0 | 3631.7 | 3627.4 | 3618.7 |
| 10°   | 3597.1 | 3597.1 | 3592.8 | 3571.2 | 3566.9 |
| 12.5° | 3528.1 | 3523.7 | 3506.5 | 3476.2 | 3467.6 |
| 15°   | 3433.1 | 3433.1 | 3398.5 | 3364.0 | 3351.0 |
| 17.5° | 3329.4 | 3325.1 | 3281.9 | 3247.4 | 3230.1 |
| 20°   | 3217.1 | 3208.5 | 3165.3 | 3109.2 | 3079.0 |
| 22.5° | 3091.9 | 3091.9 | 3040.1 | 2966.7 | 2936.4 |
| 25°   | 2975.3 | 2958.0 | 2910.5 | 2806.9 | 2729.2 |
| 27.5° | 2841.4 | 2815.5 | 2763.7 | 2616.9 | 2526.2 |
| 30°   | 2694.6 | 2681.7 | 2608.3 | 2418.2 | 2349.2 |
| 32.5° | 2556.4 | 2534.8 | 2457.1 | 2258.5 | 2202.3 |
| 35°   | 2413.9 | 2396.7 | 2280.1 | 2107.3 | 2055.5 |
| 37.5° | 2271.4 | 2249.8 | 2103.0 | 1964.8 | 1900.1 |
| 40°   | 2128.9 | 2103.0 | 1943.2 | 1818.0 | 1748.9 |
| 42.5° | 1995.1 | 1960.5 | 1805.1 | 1671.2 | 1593.5 |
| 45°   | 1852.6 | 1813.7 | 1658.2 | 1520.0 | 1459.6 |
| 47.5° | 1710.0 | 1675.5 | 1533.0 | 1390.5 | 1321.4 |
| 50°   | 1558.9 | 1528.7 | 1399.1 | 1256.6 | 1183.2 |
| 52.5° | 1433.7 | 1386.2 | 1260.9 | 1118.4 | 1058.0 |
| 55°   | 1286.9 | 1248.0 | 1131.4 | 997.5  | 945.7  |
| 57.5° | 1153.0 | 1114.1 | 1006.2 | 880.9  | 837.8  |
| 60°   | 1027.8 | 971.6  | 880.9  | 773.0  | 738.4  |
| 62.5° | 889.6  | 846.4  | 768.7  | 678.0  | 721.2  |
| 65°   | 764.3  | 721.2  | 652.1  | 665.0  | 552.7  |
| 67.5° | 626.2  | 604.6  | 544.1  | 483.6  | 466.4  |
| 70°   | 509.6  | 483.6  | 462.1  | 397.3  | 380.0  |
| 72.5° | 405.9  | 380.0  | 349.8  | 315.2  | 302.3  |
| 75°   | 306.6  | 285.0  | 267.7  | 254.8  | 280.7  |
| 77.5° | 211.6  | 203.0  | 190.0  | 177.1  | 172.7  |
| 80°   | 138.2  | 133.9  | 129.5  | 125.2  | 120.9  |
| 82.5° | 82.0   | 82.0   | 82.0   | 82.0   | 82.0   |
| 85°   | 43.2   | 47.5   | 51.8   | 56.1   | 60.5   |
| 87.5° | 25.9   | 25.9   | 30.2   | 34.5   | 38.9   |
| 90°   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |

(END OF REPORT)