

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: P590814

Luminaire Tested: FSR-24-2-LD4-4LO-35-UNV-81-85-EDD

Issue Date: 12/8/2021

**Test Information**

Test Method: LM-79-2019  
Report Number: P590814  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-2102-135-1)  
Test Lab: INNOVATION CENTER  
Issue Date: 12/8/2021  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: FAIL-SAFE  
Catalog Number: FSR-24-2-LD4-4LO-35-UNV-81-85-EDD  
Description: 2X2 FSR TROFFER WITH .156 CLEAR PC FIXTURE SIDE AND .187 CLEAR PC ENVIRONMENTAL SI  
LENSES WITH, 80 CRI AND 3500K CCT LEDS  
Light Source: -  
Ballast/Driver: -

**Summary**

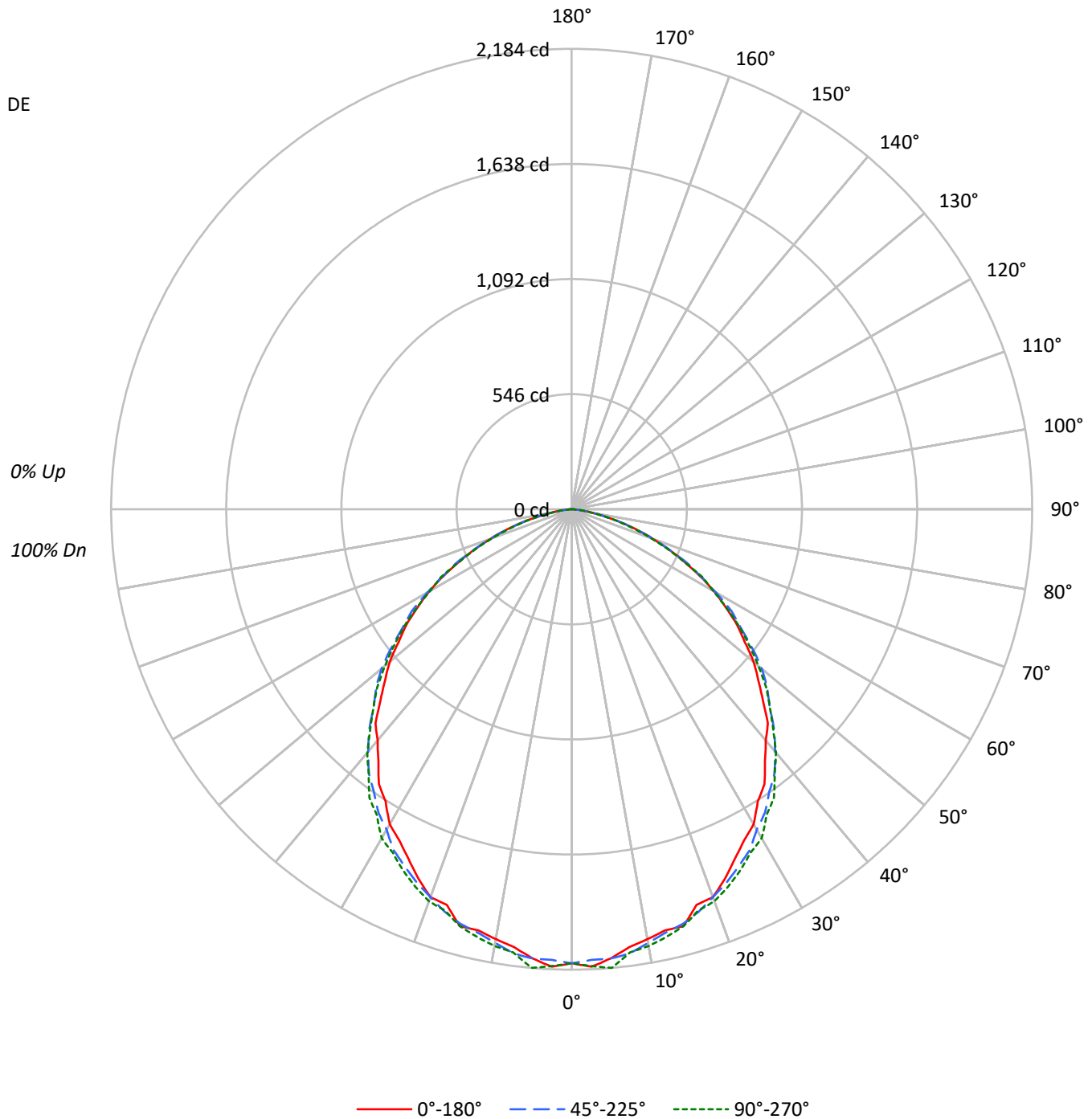
Lumens per Lamp: N/A  
Luminaire Lumens: 5427.0 lumens  
Efficiency: N/A  
Efficacy: 116.0 lumens/watt  
Spacing Criteria (0/90/45): 1.19 / 1.23 / 1.33  
Luminous Opening: Rectangular (W 2' x L: 2' x H: 0')  
CIE Type: Direct  
  
Input Watts (W): 46.8  
Input Voltage (V):  
Input Current (Ain): NR  
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 | 105 | 101 | 98  | 107 | 103 | 100 | 96  | 99  | 96  | 93  | 95  | 93  | 90  | 91  | 90  | 88  | 86  |    |    |    |    | 86  |   |  |   |
| 2   | 100 | 93  | 86  | 81  | 98  | 91  | 85  | 80  | 87  | 82  | 78  | 84  | 80  | 76  | 81  | 78  | 75  | 73  |    |    |    |    | 73  |   |  |   |
| 3   | 92  | 82  | 74  | 68  | 89  | 80  | 73  | 67  | 77  | 71  | 66  | 75  | 69  | 65  | 72  | 68  | 64  | 62  |    |    |    |    | 62  |   |  |   |
| 4   | 84  | 73  | 64  | 58  | 82  | 71  | 64  | 58  | 69  | 62  | 57  | 67  | 61  | 56  | 65  | 59  | 55  | 53  |    |    |    |    | 53  |   |  |   |
| 5   | 78  | 65  | 57  | 50  | 76  | 64  | 56  | 50  | 62  | 55  | 49  | 60  | 54  | 49  | 58  | 53  | 48  | 46  |    |    |    |    | 46  |   |  |   |
| 6   | 72  | 59  | 50  | 44  | 70  | 58  | 50  | 44  | 56  | 49  | 43  | 54  | 48  | 43  | 53  | 47  | 43  | 41  |    |    |    |    | 41  |   |  |   |
| 7   | 67  | 53  | 45  | 39  | 65  | 53  | 45  | 39  | 51  | 44  | 39  | 50  | 43  | 38  | 48  | 42  | 38  | 36  |    |    |    |    | 36  |   |  |   |
| 8   | 62  | 49  | 41  | 35  | 61  | 48  | 40  | 35  | 47  | 40  | 34  | 46  | 39  | 34  | 44  | 39  | 34  | 32  |    |    |    |    | 32  |   |  |   |
| 9   | 58  | 45  | 37  | 31  | 57  | 44  | 37  | 31  | 43  | 36  | 31  | 42  | 36  | 31  | 41  | 35  | 31  | 29  |    |    |    |    | 29  |   |  |   |
| 10  | 54  | 41  | 34  | 29  | 53  | 41  | 33  | 28  | 40  | 33  | 28  | 39  | 33  | 28  | 38  | 32  | 28  | 26  |    |    |    |    | 26  |   |  |   |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 5794 | 5794 | 5794 |
| 5°  | 5775 | 5777 | 5899 |
| 10° | 5658 | 5708 | 5748 |
| 15° | 5703 | 5672 | 5704 |
| 20° | 5607 | 5607 | 5666 |
| 25° | 5434 | 5553 | 5614 |
| 30° | 5360 | 5454 | 5599 |
| 35° | 5233 | 5370 | 5491 |
| 40° | 5030 | 5272 | 5295 |
| 45° | 4878 | 5051 | 5058 |
| 50° | 4717 | 4930 | 4836 |
| 55° | 4495 | 4582 | 4549 |
| 60° | 4203 | 4245 | 4169 |
| 65° | 3748 | 3843 | 3721 |
| 70° | 3216 | 3227 | 3137 |
| 75° | 2546 | 2541 | 2442 |
| 80° | 1706 | 1658 | 1595 |
| 85° | 926  | 917  | 858  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 67.5°  
 Vertical Angle: 45°  
 Luminance: 5181 cd/sqm



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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 202.5  | 3.7       |
| 10°-20°   | 574.1  | 10.6      |
| 20°-30°   | 860.0  | 15.8      |
| 30°-40°   | 1019.3 | 18.8      |
| 40°-50°   | 1021.2 | 18.8      |
| 50°-60°   | 866.8  | 16.0      |
| 60°-70°   | 584.4  | 10.8      |
| 70°-80°   | 256.8  | 4.7       |
| 80°-90°   | 41.7   | 0.8       |
| 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°    | 1636.6 | 30.2      |
| 0°-40°    | 2656.0 | 48.9      |
| 0°-60°    | 4544.0 | 83.7      |
| 0°-90°    | 5427.0 | 100.0     |
| 90°-120°  | 0.0    | 0.0       |
| 90°-150°  | 0.0    | 0.0       |
| 90°-180°  | 0.0    | 0.0       |
| 0°-180°   | 5427.0 | 100.0     |

**CANDELA DISTRIBUTION:**

|     | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|-----|------|-------|------|-------|------|------|
| 0°  | 2153 | 2153  | 2153 | 2153  | 2153 |      |
| 5°  | 2138 | 2133  | 2139 | 2132  | 2184 | 202  |
| 15° | 2047 | 2024  | 2036 | 2046  | 2047 | 570  |
| 25° | 1830 | 1840  | 1870 | 1895  | 1891 | 846  |
| 35° | 1593 | 1598  | 1635 | 1673  | 1672 | 989  |
| 45° | 1282 | 1306  | 1327 | 1362  | 1329 | 991  |
| 55° | 958  | 952   | 977  | 970   | 970  | 852  |
| 65° | 589  | 581   | 604  | 580   | 584  | 585  |
| 75° | 245  | 240   | 244  | 227   | 235  | 262  |
| 85° | 30   | 29    | 30   | 29    | 28   | 44   |
| 90° | 0    | 0     | 0    | 0     | 0    |      |



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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|-------|--------|--------|--------|--------|--------|
| 0°    | 2153.3 | 2153.3 | 2153.3 | 2153.3 | 2153.3 |
| 2.5°  | 2171.9 | 2155.5 | 2140.2 | 2158.0 | 2168.9 |
| 5°    | 2138.0 | 2133.0 | 2138.8 | 2132.4 | 2183.9 |
| 7.5°  | 2094.1 | 2113.3 | 2124.4 | 2117.4 | 2120.5 |
| 10°   | 2070.7 | 2064.1 | 2088.8 | 2106.0 | 2103.5 |
| 12.5° | 2045.7 | 2055.7 | 2057.1 | 2075.7 | 2077.4 |
| 15°   | 2047.1 | 2023.5 | 2036.0 | 2046.5 | 2047.4 |
| 17.5° | 1967.6 | 1993.2 | 2001.8 | 2026.0 | 1995.9 |
| 20°   | 1957.8 | 1939.2 | 1957.8 | 1982.6 | 1978.7 |
| 22.5° | 1898.1 | 1877.2 | 1917.3 | 1939.2 | 1937.8 |
| 25°   | 1830.2 | 1840.2 | 1870.3 | 1894.7 | 1890.8 |
| 27.5° | 1770.7 | 1782.4 | 1825.2 | 1858.9 | 1837.2 |
| 30°   | 1724.9 | 1719.0 | 1755.2 | 1785.2 | 1801.9 |
| 32.5° | 1642.8 | 1664.0 | 1706.2 | 1736.0 | 1720.1 |
| 35°   | 1593.1 | 1597.8 | 1634.8 | 1672.6 | 1671.5 |
| 37.5° | 1506.1 | 1528.0 | 1580.0 | 1590.6 | 1580.8 |
| 40°   | 1431.8 | 1453.8 | 1500.8 | 1512.2 | 1507.4 |
| 42.5° | 1377.1 | 1380.9 | 1421.3 | 1434.3 | 1413.5 |
| 45°   | 1281.7 | 1305.6 | 1327.3 | 1361.5 | 1329.2 |
| 47.5° | 1200.5 | 1211.6 | 1258.3 | 1267.5 | 1250.6 |
| 50°   | 1126.8 | 1130.7 | 1177.7 | 1166.3 | 1155.2 |
| 52.5° | 1034.2 | 1050.7 | 1077.1 | 1074.8 | 1061.8 |
| 55°   | 958.1  | 951.7  | 976.7  | 970.0  | 969.7  |
| 57.5° | 866.6  | 877.7  | 898.3  | 887.7  | 870.8  |
| 60°   | 781.0  | 781.2  | 788.8  | 776.8  | 774.6  |
| 62.5° | 685.6  | 688.9  | 690.6  | 675.9  | 699.8  |
| 65°   | 588.6  | 580.8  | 603.6  | 580.5  | 584.4  |
| 67.5° | 499.3  | 503.2  | 501.0  | 486.5  | 492.1  |
| 70°   | 408.7  | 413.7  | 410.1  | 393.7  | 398.7  |
| 72.5° | 325.8  | 319.7  | 323.6  | 303.0  | 312.5  |
| 75°   | 244.9  | 239.9  | 244.4  | 227.1  | 234.9  |
| 77.5° | 166.8  | 170.7  | 167.9  | 158.8  | 164.0  |
| 80°   | 110.1  | 107.0  | 107.0  | 101.8  | 102.9  |
| 82.5° | 64.2   | 61.2   | 60.3   | 58.7   | 61.2   |
| 85°   | 30.0   | 29.2   | 29.7   | 28.9   | 27.8   |
| 87.5° | 10.8   | 11.1   | 11.1   | 10.6   | 10.0   |
| 90°   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |

(END OF REPORT)