

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: P590221

Luminaire Tested: FSR-24-2-LD4-2HI-50-UNV-93-84-EDD

Issue Date: 12/8/2021

**Test Information**

Test Method: LM-79-2019  
Report Number: P590221  
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-LD4-2HI-50-UNV-93-84-EDD  
Description: 2X2 FSR TROFFER WITH .156 CLEAR TEMPERED GLASS FIXTURE SIDE AND .125 CLEAR PC ENVIRONMENTAL SIDE LENSES WITH, 80 CRI AND 5000K CCT LEDS  
Light Source: -  
Ballast/Driver: -

**Summary**

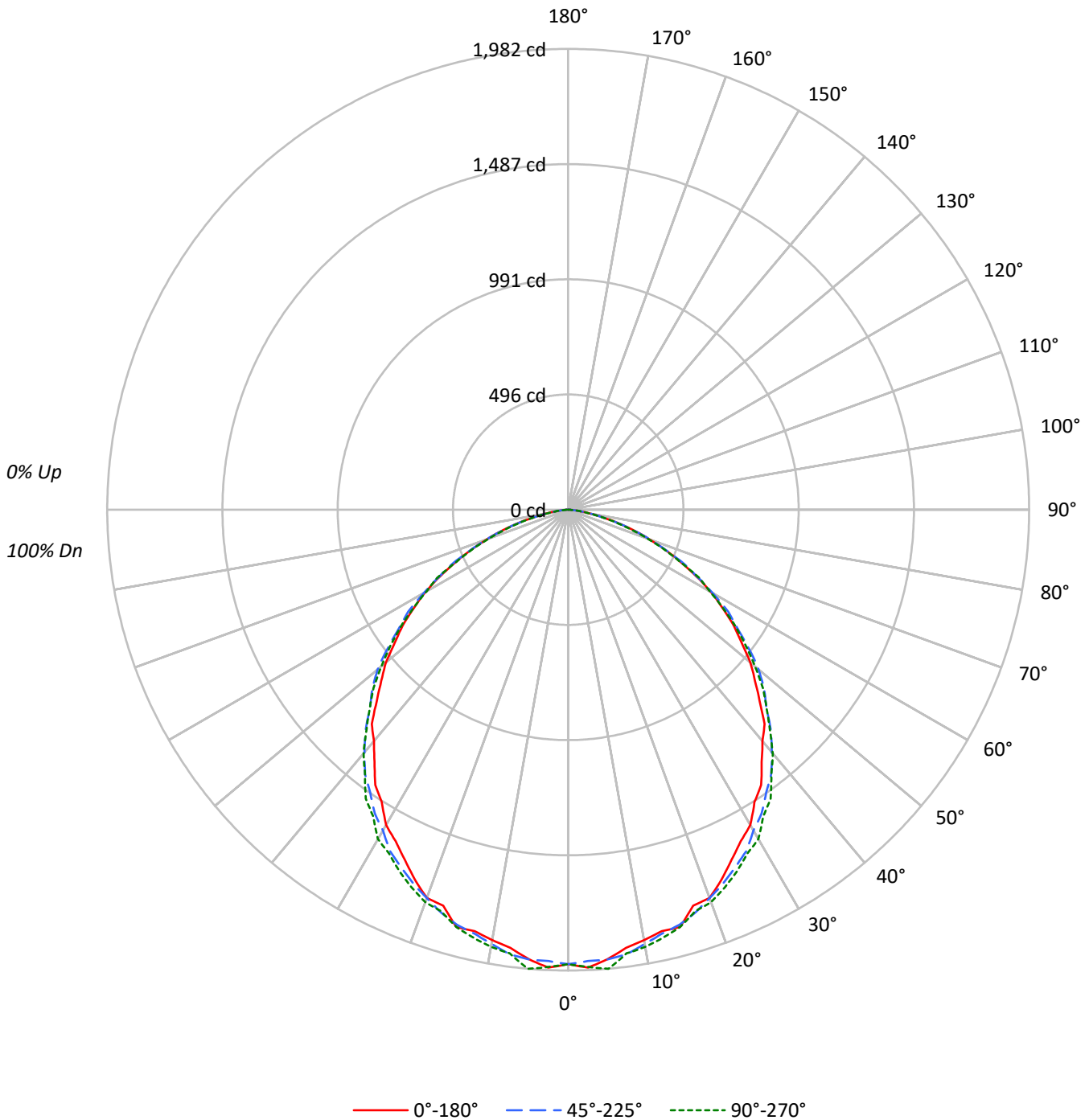
Lumens per Lamp: N/A  
Luminaire Lumens: 4926.0 lumens  
Efficiency: N/A  
Efficacy: 114.0 lumens/watt  
Spacing Criteria (0/90/45): 1.19 / 1.23 / 1.33  
Luminous Opening: Rectangular (W 2' x L: 2' x H: 0')  
CIE Type: Direct  
  
Input Watts (W): 43.2  
Input Voltage (V):  
Input Current (Ain): NR  
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 |     |   |  |   |
| 2   | 100 | 93  | 86  | 81  | 98  | 91  | 85  | 80  | 87  | 82  | 78  | 84  | 80  | 76  | 81  | 78  | 75  |     |    |    |    | 73 |     |   |  |   |
| 3   | 92  | 82  | 74  | 68  | 89  | 80  | 73  | 67  | 77  | 71  | 66  | 75  | 69  | 65  | 72  | 68  | 64  |     |    |    |    | 62 |     |   |  |   |
| 4   | 84  | 73  | 64  | 58  | 82  | 71  | 64  | 58  | 69  | 62  | 57  | 67  | 61  | 56  | 65  | 59  | 55  |     |    |    |    | 53 |     |   |  |   |
| 5   | 78  | 65  | 57  | 50  | 76  | 64  | 56  | 50  | 62  | 55  | 49  | 60  | 54  | 49  | 58  | 53  | 48  |     |    |    |    | 46 |     |   |  |   |
| 6   | 72  | 59  | 50  | 44  | 70  | 58  | 50  | 44  | 56  | 49  | 43  | 54  | 48  | 43  | 53  | 47  | 43  |     |    |    |    | 41 |     |   |  |   |
| 7   | 67  | 53  | 45  | 39  | 65  | 53  | 45  | 39  | 51  | 44  | 39  | 50  | 43  | 38  | 48  | 42  | 38  |     |    |    |    | 36 |     |   |  |   |
| 8   | 62  | 49  | 41  | 35  | 61  | 48  | 40  | 35  | 47  | 40  | 34  | 46  | 39  | 34  | 44  | 39  | 34  |     |    |    |    | 32 |     |   |  |   |
| 9   | 58  | 45  | 37  | 31  | 57  | 44  | 37  | 31  | 43  | 36  | 31  | 42  | 36  | 31  | 41  | 35  | 31  |     |    |    |    | 29 |     |   |  |   |
| 10  | 54  | 41  | 34  | 29  | 53  | 41  | 33  | 28  | 40  | 33  | 28  | 39  | 33  | 28  | 38  | 32  | 28  |     |    |    |    | 26 |     |   |  |   |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 5260 | 5260 | 5260 |
| 5°  | 5242 | 5244 | 5355 |
| 10° | 5136 | 5181 | 5217 |
| 15° | 5176 | 5148 | 5177 |
| 20° | 5089 | 5089 | 5143 |
| 25° | 4933 | 5040 | 5096 |
| 30° | 4865 | 4950 | 5082 |
| 35° | 4750 | 4875 | 4984 |
| 40° | 4565 | 4785 | 4807 |
| 45° | 4427 | 4585 | 4591 |
| 50° | 4282 | 4475 | 4389 |
| 55° | 4080 | 4159 | 4130 |
| 60° | 3815 | 3853 | 3784 |
| 65° | 3401 | 3489 | 3378 |
| 70° | 2919 | 2928 | 2847 |
| 75° | 2311 | 2306 | 2217 |
| 80° | 1548 | 1506 | 1447 |
| 85° | 843  | 834  | 778  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 67.5°  
 Vertical Angle: 45°  
 Luminance: 4703 cd/sqm



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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 183.9  | 3.7       |
| 10°-20°   | 521.1  | 10.6      |
| 20°-30°   | 780.7  | 15.8      |
| 30°-40°   | 925.2  | 18.8      |
| 40°-50°   | 926.9  | 18.8      |
| 50°-60°   | 786.8  | 16.0      |
| 60°-70°   | 530.5  | 10.8      |
| 70°-80°   | 233.1  | 4.7       |
| 80°-90°   | 37.9   | 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°    | 1485.6 | 30.2      |
| 0°-40°    | 2410.8 | 48.9      |
| 0°-60°    | 4124.6 | 83.7      |
| 0°-90°    | 4926.0 | 100.0     |
| 90°-120°  | 0.0    | 0.0       |
| 90°-150°  | 0.0    | 0.0       |
| 90°-180°  | 0.0    | 0.0       |
| 0°-180°   | 4926.0 | 100.0     |

**CANDELA DISTRIBUTION:**

|     | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|-----|------|-------|------|-------|------|------|
| 0°  | 1954 | 1954  | 1954 | 1954  | 1954 |      |
| 5°  | 1941 | 1936  | 1941 | 1936  | 1982 | 183  |
| 15° | 1858 | 1837  | 1848 | 1858  | 1858 | 518  |
| 25° | 1661 | 1670  | 1698 | 1720  | 1716 | 768  |
| 35° | 1446 | 1450  | 1484 | 1518  | 1517 | 898  |
| 45° | 1163 | 1185  | 1205 | 1236  | 1206 | 900  |
| 55° | 870  | 864   | 886  | 880   | 880  | 774  |
| 65° | 534  | 527   | 548  | 527   | 530  | 531  |
| 75° | 222  | 218   | 222  | 206   | 213  | 238  |
| 85° | 27   | 26    | 27   | 26    | 25   | 40   |
| 90° | 0    | 0     | 0    | 0     | 0    |      |



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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|-------|--------|--------|--------|--------|--------|
| 0°    | 1954.5 | 1954.5 | 1954.5 | 1954.5 | 1954.5 |
| 2.5°  | 1971.4 | 1956.5 | 1942.7 | 1958.8 | 1968.6 |
| 5°    | 1940.6 | 1936.1 | 1941.4 | 1935.6 | 1982.3 |
| 7.5°  | 1900.8 | 1918.2 | 1928.3 | 1922.0 | 1924.7 |
| 10°   | 1879.6 | 1873.5 | 1896.0 | 1911.6 | 1909.3 |
| 12.5° | 1856.8 | 1865.9 | 1867.2 | 1884.1 | 1885.6 |
| 15°   | 1858.1 | 1836.7 | 1848.0 | 1857.6 | 1858.4 |
| 17.5° | 1785.9 | 1809.2 | 1817.0 | 1838.9 | 1811.7 |
| 20°   | 1777.1 | 1760.2 | 1777.1 | 1799.6 | 1796.0 |
| 22.5° | 1722.8 | 1703.9 | 1740.3 | 1760.2 | 1758.9 |
| 25°   | 1661.3 | 1670.4 | 1697.6 | 1719.8 | 1716.3 |
| 27.5° | 1607.3 | 1617.9 | 1656.7 | 1687.3 | 1667.6 |
| 30°   | 1565.6 | 1560.3 | 1593.1 | 1620.4 | 1635.5 |
| 32.5° | 1491.2 | 1510.4 | 1548.7 | 1575.7 | 1561.3 |
| 35°   | 1446.0 | 1450.3 | 1483.9 | 1518.2 | 1517.2 |
| 37.5° | 1367.0 | 1387.0 | 1434.2 | 1443.7 | 1434.9 |
| 40°   | 1299.6 | 1319.6 | 1362.2 | 1372.6 | 1368.3 |
| 42.5° | 1249.9 | 1253.5 | 1290.1 | 1301.9 | 1283.0 |
| 45°   | 1163.4 | 1185.1 | 1204.8 | 1235.8 | 1206.5 |
| 47.5° | 1089.7 | 1099.8 | 1142.2 | 1150.5 | 1135.1 |
| 50°   | 1022.8 | 1026.3 | 1069.0 | 1058.6 | 1048.5 |
| 52.5° | 938.8  | 953.7  | 977.6  | 975.6  | 963.8  |
| 55°   | 869.6  | 863.8  | 886.5  | 880.5  | 880.2  |
| 57.5° | 786.6  | 796.7  | 815.4  | 805.8  | 790.4  |
| 60°   | 708.9  | 709.1  | 715.9  | 705.1  | 703.1  |
| 62.5° | 622.3  | 625.3  | 626.9  | 613.5  | 635.2  |
| 65°   | 534.2  | 527.2  | 547.9  | 526.9  | 530.5  |
| 67.5° | 453.2  | 456.8  | 454.7  | 441.6  | 446.7  |
| 70°   | 371.0  | 375.5  | 372.2  | 357.3  | 361.9  |
| 72.5° | 295.8  | 290.2  | 293.7  | 275.1  | 283.7  |
| 75°   | 222.3  | 217.8  | 221.8  | 206.2  | 213.2  |
| 77.5° | 151.4  | 154.9  | 152.4  | 144.1  | 148.9  |
| 80°   | 99.9   | 97.2   | 97.2   | 92.4   | 93.4   |
| 82.5° | 58.3   | 55.5   | 54.8   | 53.2   | 55.5   |
| 85°   | 27.3   | 26.5   | 27.0   | 26.2   | 25.2   |
| 87.5° | 9.8    | 10.1   | 10.1   | 9.6    | 9.1    |
| 90°   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |

(END OF REPORT)