

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: P561988

Luminaire Tested: FSR-24-4-LD4-1HI-35-UNV-81-86-EDD-90

Issue Date: 7/20/2021

**Test Information**

Test Method: LM-79-2019  
Report Number: P561988  
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-LD4-1HI-35-UNV-81-86-EDD-90  
Description: 2X4 FSR TROFFER WITH .156 CLEAR PC FIXTURE SIDE AND .250 CLEAR PC ENVIRONMENTAL SI  
LENSES WITH, 90 CRI AND 3500K CCT LEDS  
Light Source: -  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 3687.0 lumens  
Efficiency: N/A  
Efficacy: 85.3 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

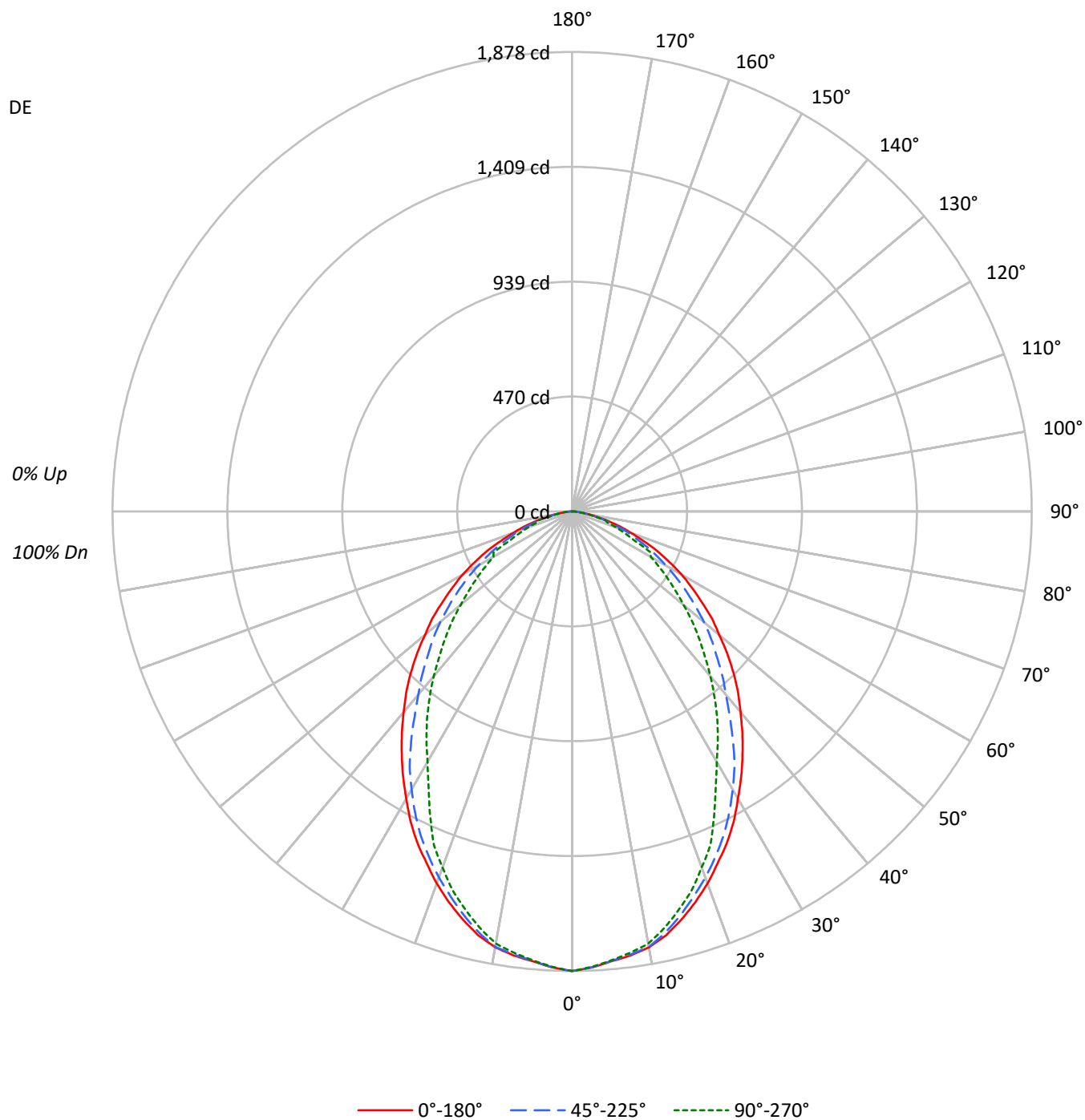
Input Watts (W): 43.2  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT



TEST NUMBER: P561988

CATALOG NUMBER: FSR-24-4-LD4-1HI-35-UNV-81-86-EDD-90

### Luminous Intensity Polar Plot



TEST NUMBER: P561988

CATALOG NUMBER: FSR-24-4-LD4-1HI-35-UNV-81-86-EDD-90

### COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |  |  |    |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|--|----|
| RF  | 20  |     |     |     |     | 20  |     |     |     |     | 20  |     |     |     |     | 20  |     |     |  |  | 20 |
| RC  | 80  |     |     |     |     | 70  |     |     |     |     | 50  |     |     |     |     | 30  |     |     |  |  | 0  |
| RW  | 70  | 50  | 30  | 10  | 70  | 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 |  |  |    |
| 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°  | 2527 | 2527 | 2527 |
| 5°  | 2493 | 2490 | 2487 |
| 10° | 2471 | 2468 | 2450 |
| 15° | 2404 | 2380 | 2347 |
| 20° | 2316 | 2279 | 2217 |
| 25° | 2221 | 2173 | 2037 |
| 30° | 2105 | 2037 | 1835 |
| 35° | 1994 | 1883 | 1698 |
| 40° | 1880 | 1716 | 1544 |
| 45° | 1772 | 1586 | 1396 |
| 50° | 1641 | 1473 | 1245 |
| 55° | 1518 | 1335 | 1115 |
| 60° | 1391 | 1192 | 999  |
| 65° | 1223 | 1044 | 885  |
| 70° | 1008 | 914  | 752  |
| 75° | 802  | 700  | 734  |
| 80° | 539  | 504  | 471  |
| 85° | 335  | 403  | 469  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle:  $0^\circ$ 

Vertical Angle:  $45^\circ$

Luminance: 1772 cd/sqm

TEST NUMBER: P561988

CATALOG NUMBER: FSR-24-4-LD4-1HI-35-UNV-81-86-EDD-90

**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 174.8  | 4.7       |
| 10°-20°   | 479.8  | 13.0      |
| 20°-30°   | 664.2  | 18.0      |
| 30°-40°   | 708.3  | 19.2      |
| 40°-50°   | 646.2  | 17.5      |
| 50°-60°   | 506.2  | 13.7      |
| 60°-70°   | 329.9  | 8.9       |
| 70°-80°   | 146.2  | 4.0       |
| 80°-90°   | 31.4   | 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°    | 1318.9 | 35.8      |
| 0°-40°    | 2027.1 | 55.0      |
| 0°-60°    | 3179.5 | 86.2      |
| 0°-90°    | 3687.0 | 100.0     |
| 90°-120°  | 0.0    | 0.0       |
| 90°-150°  | 0.0    | 0.0       |
| 90°-180°  | 0.0    | 0.0       |
| 0°-180°   | 3687.0 | 100.0     |

**CANDELA DISTRIBUTION:**

|     | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|-----|------|-------|------|-------|------|------|
| 0°  | 1878 | 1878  | 1878 | 1878  | 1878 |      |
| 5°  | 1846 | 1843  | 1843 | 1841  | 1841 | 175  |
| 15° | 1726 | 1726  | 1709 | 1691  | 1685 | 485  |
| 25° | 1496 | 1487  | 1463 | 1411  | 1372 | 687  |
| 35° | 1214 | 1205  | 1146 | 1060  | 1034 | 759  |
| 45° | 932  | 912   | 834  | 764   | 734  | 717  |
| 55° | 647  | 628   | 569  | 502   | 476  | 580  |
| 65° | 384  | 363   | 328  | 334   | 278  | 379  |
| 75° | 154  | 143   | 135  | 128   | 141  | 165  |
| 85° | 22   | 24    | 26   | 28    | 30   | 30   |
| 90° | 0    | 0     | 0    | 0     | 0    |      |

TEST NUMBER: P561988

CATALOG NUMBER: FSR-24-4-LD4-1HI-35-UNV-81-86-EDD-90

**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|-------|--------|--------|--------|--------|--------|
| 0°    | 1878.1 | 1878.1 | 1878.1 | 1878.1 | 1878.1 |
| 2.5°  | 1865.1 | 1865.1 | 1865.1 | 1862.9 | 1862.9 |
| 5°    | 1845.5 | 1843.4 | 1843.4 | 1841.2 | 1841.2 |
| 7.5°  | 1830.3 | 1828.2 | 1826.0 | 1823.8 | 1819.5 |
| 10°   | 1808.6 | 1808.6 | 1806.5 | 1795.6 | 1793.4 |
| 12.5° | 1773.9 | 1771.7 | 1763.0 | 1747.8 | 1743.5 |
| 15°   | 1726.1 | 1726.1 | 1708.8 | 1691.4 | 1684.9 |
| 17.5° | 1674.0 | 1671.8 | 1650.1 | 1632.8 | 1624.1 |
| 20°   | 1617.6 | 1613.2 | 1591.5 | 1563.3 | 1548.1 |
| 22.5° | 1554.6 | 1554.6 | 1528.5 | 1491.6 | 1476.4 |
| 25°   | 1496.0 | 1487.3 | 1463.4 | 1411.3 | 1372.2 |
| 27.5° | 1428.7 | 1415.6 | 1389.6 | 1315.8 | 1270.2 |
| 30°   | 1354.8 | 1348.3 | 1311.4 | 1215.9 | 1181.1 |
| 32.5° | 1285.4 | 1274.5 | 1235.4 | 1135.6 | 1107.3 |
| 35°   | 1213.7 | 1205.0 | 1146.4 | 1059.6 | 1033.5 |
| 37.5° | 1142.1 | 1131.2 | 1057.4 | 987.9  | 955.3  |
| 40°   | 1070.4 | 1057.4 | 977.1  | 914.1  | 879.3  |
| 42.5° | 1003.1 | 985.7  | 907.6  | 840.3  | 801.2  |
| 45°   | 931.5  | 911.9  | 833.7  | 764.3  | 733.9  |
| 47.5° | 859.8  | 842.4  | 770.8  | 699.1  | 664.4  |
| 50°   | 783.8  | 768.6  | 703.5  | 631.8  | 594.9  |
| 52.5° | 720.8  | 697.0  | 634.0  | 562.3  | 531.9  |
| 55°   | 647.0  | 627.5  | 568.9  | 501.6  | 475.5  |
| 57.5° | 579.7  | 560.2  | 505.9  | 442.9  | 421.2  |
| 60°   | 516.8  | 488.5  | 442.9  | 388.6  | 371.3  |
| 62.5° | 447.3  | 425.6  | 386.5  | 340.9  | 362.6  |
| 65°   | 384.3  | 362.6  | 327.9  | 334.4  | 277.9  |
| 67.5° | 314.8  | 304.0  | 273.6  | 243.2  | 234.5  |
| 70°   | 256.2  | 243.2  | 232.3  | 199.8  | 191.1  |
| 72.5° | 204.1  | 191.1  | 175.9  | 158.5  | 152.0  |
| 75°   | 154.2  | 143.3  | 134.6  | 128.1  | 141.1  |
| 77.5° | 106.4  | 102.0  | 95.5   | 89.0   | 86.8   |
| 80°   | 69.5   | 67.3   | 65.1   | 63.0   | 60.8   |
| 82.5° | 41.3   | 41.3   | 41.3   | 41.3   | 41.3   |
| 85°   | 21.7   | 23.9   | 26.1   | 28.2   | 30.4   |
| 87.5° | 13.0   | 13.0   | 15.2   | 17.4   | 19.5   |
| 90°   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |

(END OF REPORT)