

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: P590591

Luminaire Tested: FSR-24-2-LD4-3LO-50-UNV-81-86-EDD

Issue Date: 12/8/2021

**Test Information**

Test Method: LM-79-2019  
Report Number: P590591  
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-LD4-3LO-50-UNV-81-86-EDD  
Description: 2X2 FSR TROFFER WITH .156 CLEAR PC FIXTURE SIDE AND .250 CLEAR PC ENVIRONMENTAL SI  
LENSES WITH, 80 CRI AND 5000K CCT LEDS  
Light Source: -  
Ballast/Driver: -

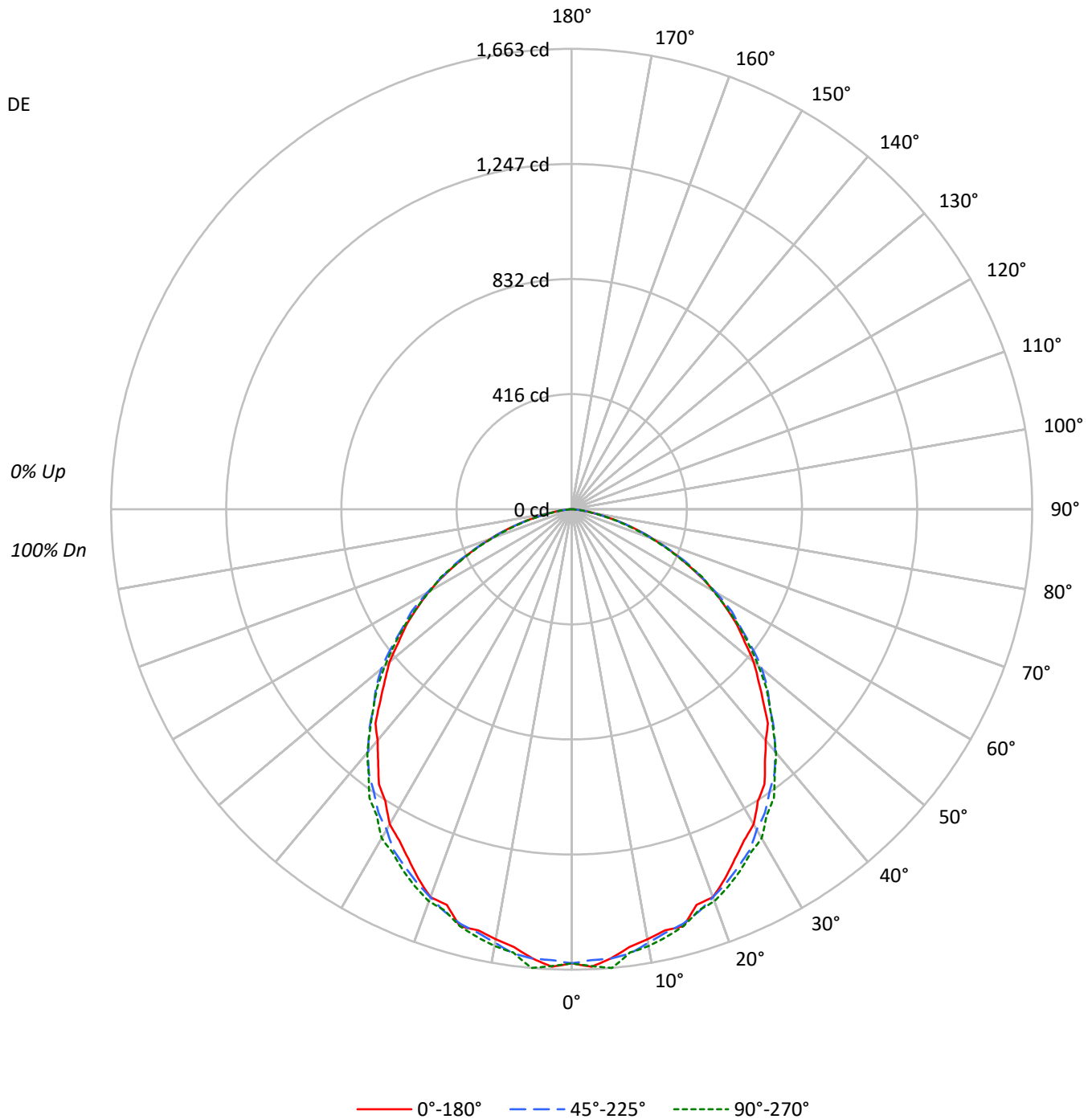
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 4133.0 lumens  
Efficiency: N/A  
Efficacy: 117.7 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): 35.1  
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  | 0   |
| RCR |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| 0   | 119 | 119 | 119 | 119 | 116 | 116 | 116 | 116 | 111 | 111 | 111 | 106 | 106 | 106 | 102 | 102 | 102 | 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°  | 4413 | 4413 | 4413 |
| 5°  | 4398 | 4400 | 4493 |
| 10° | 4309 | 4347 | 4377 |
| 15° | 4343 | 4320 | 4344 |
| 20° | 4270 | 4270 | 4315 |
| 25° | 4138 | 4229 | 4276 |
| 30° | 4082 | 4153 | 4264 |
| 35° | 3985 | 4090 | 4182 |
| 40° | 3830 | 4015 | 4033 |
| 45° | 3715 | 3847 | 3852 |
| 50° | 3593 | 3755 | 3683 |
| 55° | 3423 | 3490 | 3465 |
| 60° | 3201 | 3233 | 3175 |
| 65° | 2854 | 2927 | 2834 |
| 70° | 2448 | 2457 | 2389 |
| 75° | 1939 | 1935 | 1860 |
| 80° | 1299 | 1263 | 1213 |
| 85° | 707  | 701  | 655  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 67.5°

Vertical Angle: 45°

Luminance: 3946 cd/sqm



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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 154.3  | 3.7       |
| 10°-20°   | 437.2  | 10.6      |
| 20°-30°   | 655.0  | 15.8      |
| 30°-40°   | 776.3  | 18.8      |
| 40°-50°   | 777.7  | 18.8      |
| 50°-60°   | 660.2  | 16.0      |
| 60°-70°   | 445.1  | 10.8      |
| 70°-80°   | 195.6  | 4.7       |
| 80°-90°   | 31.8   | 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°    | 1246.4 | 30.2      |
| 0°-40°    | 2022.7 | 48.9      |
| 0°-60°    | 3460.6 | 83.7      |
| 0°-90°    | 4133.0 | 100.0     |
| 90°-120°  | 0.0    | 0.0       |
| 90°-150°  | 0.0    | 0.0       |
| 90°-180°  | 0.0    | 0.0       |
| 0°-180°   | 4133.0 | 100.0     |

**CANDELA DISTRIBUTION:**

|     | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|-----|------|-------|------|-------|------|------|
| 0°  | 1640 | 1640  | 1640 | 1640  | 1640 |      |
| 5°  | 1628 | 1624  | 1629 | 1624  | 1663 | 154  |
| 15° | 1559 | 1541  | 1550 | 1559  | 1559 | 434  |
| 25° | 1394 | 1402  | 1424 | 1443  | 1440 | 644  |
| 35° | 1213 | 1217  | 1245 | 1274  | 1273 | 753  |
| 45° | 976  | 994   | 1011 | 1037  | 1012 | 755  |
| 55° | 730  | 725   | 744  | 739   | 738  | 649  |
| 65° | 448  | 442   | 460  | 442   | 445  | 446  |
| 75° | 186  | 183   | 186  | 173   | 179  | 200  |
| 85° | 23   | 22    | 23   | 22    | 21   | 33   |
| 90° | 0    | 0     | 0    | 0     | 0    |      |



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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|-------|--------|--------|--------|--------|--------|
| 0°    | 1639.9 | 1639.9 | 1639.9 | 1639.9 | 1639.9 |
| 2.5°  | 1654.1 | 1641.6 | 1629.9 | 1643.5 | 1651.7 |
| 5°    | 1628.2 | 1624.4 | 1628.9 | 1624.0 | 1663.2 |
| 7.5°  | 1594.8 | 1609.4 | 1617.8 | 1612.6 | 1614.9 |
| 10°   | 1577.0 | 1571.9 | 1590.7 | 1603.9 | 1602.0 |
| 12.5° | 1557.9 | 1565.6 | 1566.6 | 1580.8 | 1582.1 |
| 15°   | 1559.0 | 1541.0 | 1550.5 | 1558.6 | 1559.2 |
| 17.5° | 1498.4 | 1517.9 | 1524.5 | 1542.9 | 1520.0 |
| 20°   | 1491.0 | 1476.8 | 1491.0 | 1509.9 | 1506.9 |
| 22.5° | 1445.5 | 1429.6 | 1460.1 | 1476.8 | 1475.8 |
| 25°   | 1393.8 | 1401.5 | 1424.3 | 1443.0 | 1440.0 |
| 27.5° | 1348.5 | 1357.4 | 1390.0 | 1415.6 | 1399.1 |
| 30°   | 1313.6 | 1309.1 | 1336.7 | 1359.5 | 1372.2 |
| 32.5° | 1251.1 | 1267.2 | 1299.4 | 1322.1 | 1310.0 |
| 35°   | 1213.2 | 1216.8 | 1245.0 | 1273.8 | 1272.9 |
| 37.5° | 1147.0 | 1163.7 | 1203.3 | 1211.3 | 1203.9 |
| 40°   | 1090.4 | 1107.2 | 1142.9 | 1151.6 | 1148.0 |
| 42.5° | 1048.7 | 1051.7 | 1082.4 | 1092.3 | 1076.4 |
| 45°   | 976.1  | 994.3  | 1010.8 | 1036.9 | 1012.3 |
| 47.5° | 914.3  | 922.7  | 958.3  | 965.3  | 952.4  |
| 50°   | 858.2  | 861.1  | 896.9  | 888.2  | 879.7  |
| 52.5° | 787.6  | 800.1  | 820.3  | 818.6  | 808.6  |
| 55°   | 729.6  | 724.8  | 743.8  | 738.7  | 738.5  |
| 57.5° | 660.0  | 668.4  | 684.1  | 676.1  | 663.1  |
| 60°   | 594.8  | 595.0  | 600.7  | 591.6  | 589.9  |
| 62.5° | 522.1  | 524.7  | 525.9  | 514.7  | 532.9  |
| 65°   | 448.2  | 442.3  | 459.7  | 442.1  | 445.1  |
| 67.5° | 380.3  | 383.2  | 381.5  | 370.5  | 374.8  |
| 70°   | 311.2  | 315.1  | 312.3  | 299.8  | 303.6  |
| 72.5° | 248.2  | 243.5  | 246.5  | 230.8  | 238.0  |
| 75°   | 186.5  | 182.7  | 186.1  | 173.0  | 178.9  |
| 77.5° | 127.0  | 130.0  | 127.9  | 120.9  | 124.9  |
| 80°   | 83.8   | 81.5   | 81.5   | 77.5   | 78.3   |
| 82.5° | 48.9   | 46.6   | 45.9   | 44.7   | 46.6   |
| 85°   | 22.9   | 22.2   | 22.7   | 22.0   | 21.2   |
| 87.5° | 8.3    | 8.5    | 8.5    | 8.0    | 7.6    |
| 90°   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |

(END OF REPORT)