

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: P564096

Luminaire Tested: FSR-24-4-LD4-4STD-40-UNV-81-84-EDD-90

Issue Date: 7/20/2021

Test Information

Test Method: LM-79-2019
Report Number: P564096
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-LD4-4STD-40-UNV-81-84-EDD-90
Description: 2X4 FSR TROFFER WITH .156 CLEAR PC FIXTURE SIDE AND .125 CLEAR PC ENVIRONMENTAL SI
LENSES WITH, 90 CRI AND 4000K CCT LEDS
Light Source: -
Ballast/Driver: -

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 12584.0 lumens
Efficiency: N/A
Efficacy: 94.5 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

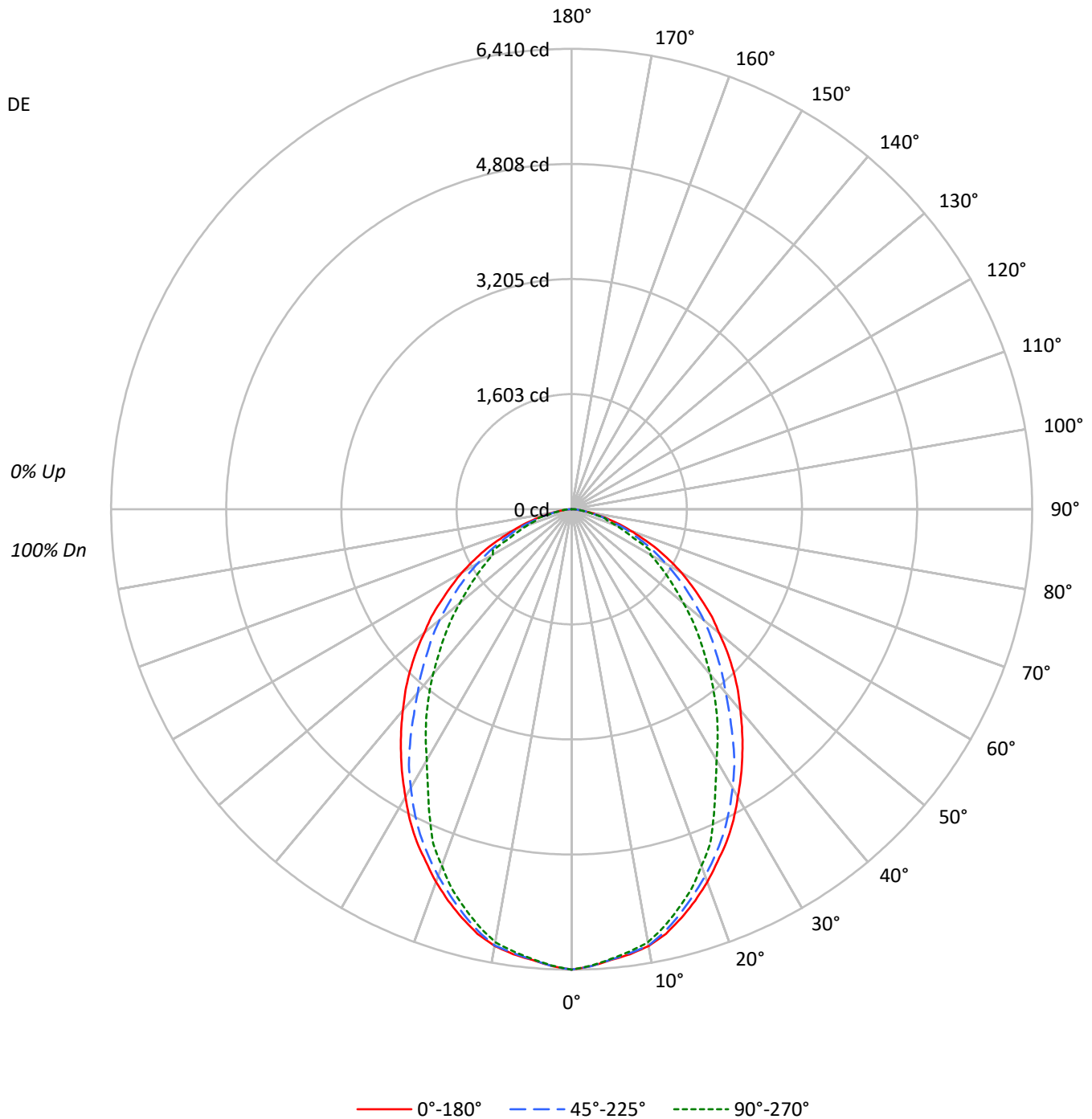
Input Watts (W): 133.2
Input Voltage (V):
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 24 FT



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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 | 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° | 8625 | 8625 | 8625 |
| 5° | 8508 | 8498 | 8487 |
| 10° | 8434 | 8424 | 8363 |
| 15° | 8206 | 8124 | 8010 |
| 20° | 7905 | 7778 | 7565 |
| 25° | 7580 | 7415 | 6953 |
| 30° | 7184 | 6954 | 6263 |
| 35° | 6804 | 6427 | 5794 |
| 40° | 6417 | 5857 | 5272 |
| 45° | 6049 | 5415 | 4766 |
| 50° | 5600 | 5026 | 4250 |
| 55° | 5180 | 4555 | 3807 |
| 60° | 4746 | 4068 | 3410 |
| 65° | 4176 | 3563 | 3020 |
| 70° | 3440 | 3119 | 2565 |
| 75° | 2735 | 2389 | 2504 |
| 80° | 1837 | 1722 | 1608 |
| 85° | 1144 | 1372 | 1601 |

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°
 Vertical Angle: 45°
 Luminance: 6049 cd/sqm



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ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|---------|-----------|
| 0°-10° | 596.7 | 4.7 |
| 10°-20° | 1637.6 | 13.0 |
| 20°-30° | 2267.1 | 18.0 |
| 30°-40° | 2417.4 | 19.2 |
| 40°-50° | 2205.4 | 17.5 |
| 50°-60° | 1727.7 | 13.7 |
| 60°-70° | 1126.1 | 8.9 |
| 70°-80° | 498.9 | 4.0 |
| 80°-90° | 107.1 | 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° | 4501.4 | 35.8 |
| 0°-40° | 6918.8 | 55.0 |
| 0°-60° | 10851.9 | 86.2 |
| 0°-90° | 12584.0 | 100.0 |
| 90°-120° | 0.0 | 0.0 |
| 90°-150° | 0.0 | 0.0 |
| 90°-180° | 0.0 | 0.0 |
| 0°-180° | 12584.0 | 100.0 |

CANDELA DISTRIBUTION:

| | 0° | 22.5° | 45° | 67.5° | 90° | Flux |
|-----|------|-------|------|-------|------|------|
| 0° | 6410 | 6410 | 6410 | 6410 | 6410 | |
| 5° | 6299 | 6292 | 6292 | 6284 | 6284 | 598 |
| 15° | 5891 | 5891 | 5832 | 5773 | 5751 | 1656 |
| 25° | 5106 | 5076 | 4995 | 4817 | 4684 | 2344 |
| 35° | 4142 | 4113 | 3913 | 3616 | 3527 | 2590 |
| 45° | 3179 | 3112 | 2846 | 2608 | 2505 | 2449 |
| 55° | 2208 | 2142 | 1942 | 1712 | 1623 | 1981 |
| 65° | 1312 | 1238 | 1119 | 1141 | 948 | 1293 |
| 75° | 526 | 489 | 460 | 437 | 482 | 564 |
| 85° | 74 | 82 | 89 | 96 | 104 | 103 |
| 90° | 0 | 0 | 0 | 0 | 0 | |



TEST NUMBER: P564096

CATALOG NUMBER: FSR-24-4-LD4-4STD-40-UNV-81-84-EDD-90

CANDELA DISTRIBUTION (FULL):

| | 0° | 22.5° | 45° | 67.5° | 90° |
|-------|--------|--------|--------|--------|--------|
| 0° | 6410.1 | 6410.1 | 6410.1 | 6410.1 | 6410.1 |
| 2.5° | 6365.7 | 6365.7 | 6365.7 | 6358.2 | 6358.2 |
| 5° | 6299.0 | 6291.6 | 6291.6 | 6284.1 | 6284.1 |
| 7.5° | 6247.1 | 6239.7 | 6232.3 | 6224.9 | 6210.0 |
| 10° | 6173.0 | 6173.0 | 6165.6 | 6128.5 | 6121.1 |
| 12.5° | 6054.4 | 6047.0 | 6017.4 | 5965.5 | 5950.7 |
| 15° | 5891.4 | 5891.4 | 5832.1 | 5772.8 | 5750.6 |
| 17.5° | 5713.5 | 5706.1 | 5632.0 | 5572.7 | 5543.1 |
| 20° | 5520.9 | 5506.0 | 5431.9 | 5335.6 | 5283.7 |
| 22.5° | 5306.0 | 5306.0 | 5217.0 | 5091.0 | 5039.2 |
| 25° | 5105.9 | 5076.2 | 4994.7 | 4816.9 | 4683.5 |
| 27.5° | 4876.1 | 4831.7 | 4742.7 | 4490.8 | 4335.2 |
| 30° | 4624.2 | 4601.9 | 4476.0 | 4149.9 | 4031.3 |
| 32.5° | 4387.0 | 4350.0 | 4216.6 | 3875.7 | 3779.4 |
| 35° | 4142.5 | 4112.9 | 3912.8 | 3616.3 | 3527.4 |
| 37.5° | 3897.9 | 3860.9 | 3608.9 | 3371.8 | 3260.6 |
| 40° | 3653.4 | 3608.9 | 3334.7 | 3119.8 | 3001.3 |
| 42.5° | 3423.7 | 3364.4 | 3097.6 | 2867.9 | 2734.5 |
| 45° | 3179.1 | 3112.4 | 2845.6 | 2608.5 | 2504.8 |
| 47.5° | 2934.6 | 2875.3 | 2630.7 | 2386.2 | 2267.6 |
| 50° | 2675.2 | 2623.3 | 2401.0 | 2156.5 | 2030.5 |
| 52.5° | 2460.3 | 2378.8 | 2163.9 | 1919.3 | 1815.6 |
| 55° | 2208.3 | 2141.6 | 1941.6 | 1711.8 | 1622.9 |
| 57.5° | 1978.6 | 1911.9 | 1726.7 | 1511.8 | 1437.6 |
| 60° | 1763.7 | 1667.4 | 1511.8 | 1326.5 | 1267.2 |
| 62.5° | 1526.6 | 1452.5 | 1319.1 | 1163.5 | 1237.6 |
| 65° | 1311.7 | 1237.6 | 1119.0 | 1141.2 | 948.5 |
| 67.5° | 1074.5 | 1037.5 | 933.7 | 830.0 | 800.3 |
| 70° | 874.4 | 830.0 | 792.9 | 681.8 | 652.1 |
| 72.5° | 696.6 | 652.1 | 600.3 | 541.0 | 518.7 |
| 75° | 526.1 | 489.1 | 459.5 | 437.2 | 481.7 |
| 77.5° | 363.1 | 348.3 | 326.1 | 303.8 | 296.4 |
| 80° | 237.1 | 229.7 | 222.3 | 214.9 | 207.5 |
| 82.5° | 140.8 | 140.8 | 140.8 | 140.8 | 140.8 |
| 85° | 74.1 | 81.5 | 88.9 | 96.3 | 103.7 |
| 87.5° | 44.5 | 44.5 | 51.9 | 59.3 | 66.7 |
| 90° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

(END OF REPORT)