

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: P563998

Luminaire Tested: FSR-24-4-LD4-4LO-50-UNV-82-97-EDD-90

Issue Date: 7/20/2021

Test Information

Test Method: LM-79-2019
Report Number: P563998
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-LD4-4LO-50-UNV-82-97-EDD-90
Description: 2X4 FSR TROFFER WITH .187 CLEAR PC FIXTURE SIDE AND .375 CLEAR TEMPERED GLASS ENVIRONMENTAL SIDE LENSES WITH, 90 CRI AND 5000K CCT LEDS
Light Source: -
Ballast/Driver: -

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 9457.0 lumens
Efficiency: N/A
Efficacy: 101.0 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

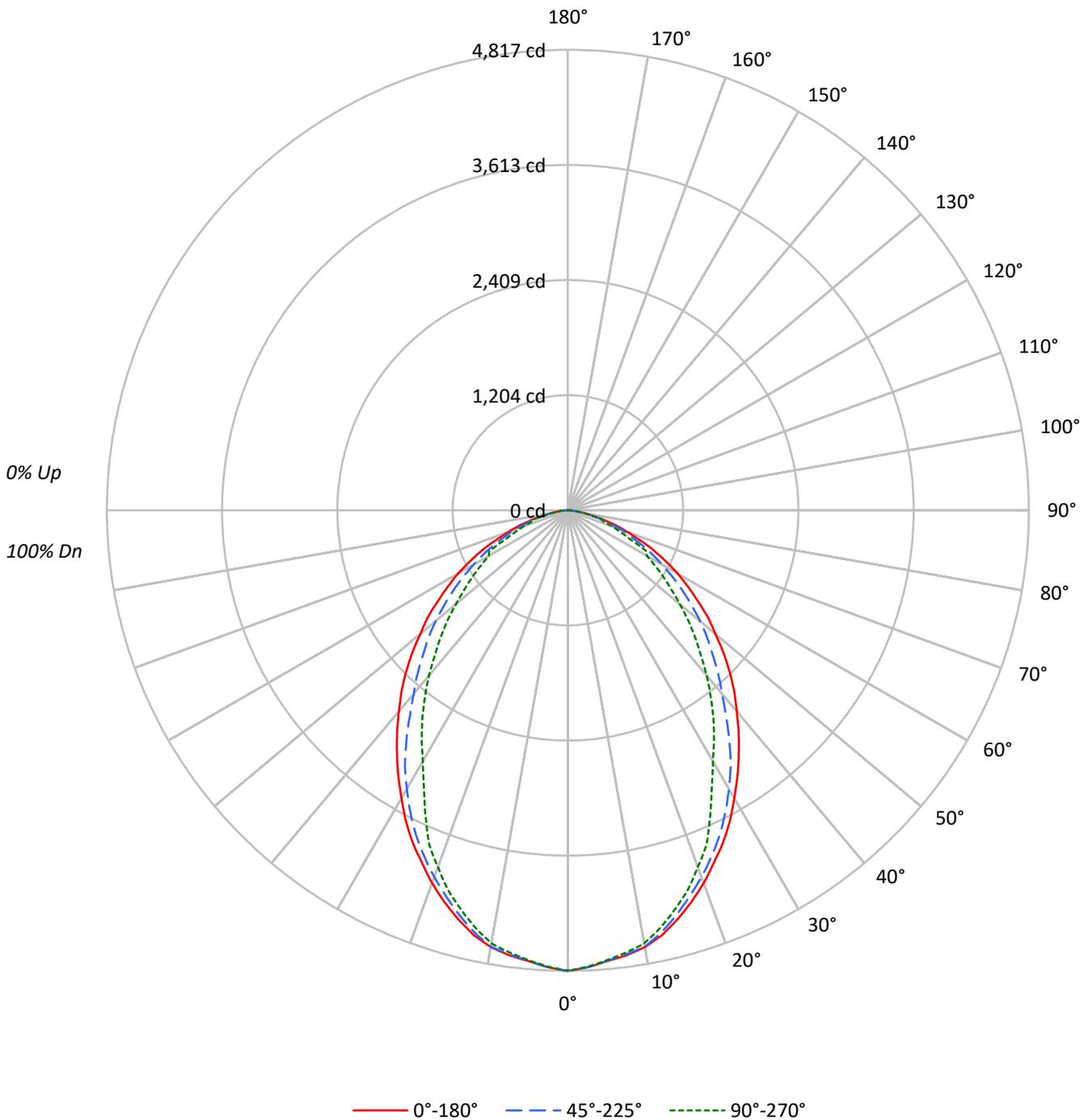
Input Watts (W): 93.6
Input Voltage (V):
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 24 FT



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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 | 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 | 106 | 102 | 99 | 108 | 104 | 100 | 97 | 100 | 97 | 94 | 96 | 94 | 91 | 92 | 90 | 89 | 87 | | | | | | | | | | | | | 87 | | | | | | | | | | | | | | | |
| 2 | 101 | 94 | 88 | 83 | 99 | 92 | 87 | 82 | 89 | 84 | 80 | 86 | 82 | 78 | 83 | 79 | 77 | 75 | | | | | | | | | | | | | 75 | | | | | | | | | | | | | | | |
| 3 | 93 | 84 | 77 | 71 | 91 | 82 | 76 | 70 | 79 | 74 | 69 | 77 | 72 | 68 | 74 | 70 | 67 | 65 | | | | | | | | | | | | | 65 | | | | | | | | | | | | | | | |
| 4 | 86 | 75 | 67 | 61 | 84 | 74 | 66 | 61 | 72 | 65 | 60 | 69 | 64 | 59 | 67 | 62 | 58 | 56 | | | | | | | | | | | | | 56 | | | | | | | | | | | | | | | |
| 5 | 80 | 68 | 60 | 54 | 78 | 67 | 59 | 53 | 65 | 58 | 53 | 63 | 57 | 52 | 61 | 56 | 52 | 50 | | | | | | | | | | | | | 50 | | | | | | | | | | | | | | | |
| 6 | 74 | 62 | 53 | 48 | 72 | 61 | 53 | 47 | 59 | 52 | 47 | 57 | 51 | 47 | 56 | 50 | 46 | 44 | | | | | | | | | | | | | 44 | | | | | | | | | | | | | | | |
| 7 | 69 | 56 | 48 | 43 | 67 | 56 | 48 | 42 | 54 | 47 | 42 | 53 | 46 | 42 | 51 | 46 | 42 | 40 | | | | | | | | | | | | | 40 | | | | | | | | | | | | | | | |
| 8 | 65 | 52 | 44 | 38 | 63 | 51 | 44 | 38 | 50 | 43 | 38 | 49 | 42 | 38 | 48 | 42 | 38 | 36 | | | | | | | | | | | | | 36 | | | | | | | | | | | | | | | |
| 9 | 61 | 48 | 40 | 35 | 59 | 47 | 40 | 35 | 46 | 39 | 35 | 45 | 39 | 34 | 44 | 38 | 34 | 33 | | | | | | | | | | | | | 33 | | | | | | | | | | | | | | | |
| 10 | 57 | 44 | 37 | 32 | 56 | 44 | 37 | 32 | 43 | 36 | 32 | 42 | 36 | 32 | 41 | 36 | 32 | 30 | | | | | | | | | | | | | 30 | | | | | | | | | | | | | | | |

AVERAGE LUMINANCE (cd/sqm):

| | 0° | 45° | 90° |
|-----|------|------|------|
| 0° | 6482 | 6482 | 6482 |
| 5° | 6393 | 6386 | 6378 |
| 10° | 6338 | 6330 | 6285 |
| 15° | 6167 | 6105 | 6020 |
| 20° | 5941 | 5845 | 5686 |
| 25° | 5696 | 5573 | 5225 |
| 30° | 5399 | 5226 | 4707 |
| 35° | 5113 | 4830 | 4354 |
| 40° | 4822 | 4402 | 3962 |
| 45° | 4546 | 4069 | 3582 |
| 50° | 4208 | 3777 | 3194 |
| 55° | 3893 | 3423 | 2861 |
| 60° | 3567 | 3057 | 2563 |
| 65° | 3138 | 2677 | 2269 |
| 70° | 2585 | 2344 | 1928 |
| 75° | 2056 | 1795 | 1882 |
| 80° | 1381 | 1295 | 1208 |
| 85° | 860 | 1031 | 1204 |

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°
 Vertical Angle: 45°
 Luminance: 4546 cd/sqm



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ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10° | 448.4 | 4.7 |
| 10°-20° | 1230.7 | 13.0 |
| 20°-30° | 1703.8 | 18.0 |
| 30°-40° | 1816.7 | 19.2 |
| 40°-50° | 1657.4 | 17.5 |
| 50°-60° | 1298.4 | 13.7 |
| 60°-70° | 846.2 | 8.9 |
| 70°-80° | 374.9 | 4.0 |
| 80°-90° | 80.5 | 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° | 3382.8 | 35.8 |
| 0°-40° | 5199.6 | 55.0 |
| 0°-60° | 8155.3 | 86.2 |
| 0°-90° | 9457.0 | 100.0 |
| 90°-120° | 0.0 | 0.0 |
| 90°-150° | 0.0 | 0.0 |
| 90°-180° | 0.0 | 0.0 |
| 0°-180° | 9457.0 | 100.0 |

CANDELA DISTRIBUTION:

| | 0° | 22.5° | 45° | 67.5° | 90° | Flux |
|-----|------|-------|------|-------|------|------|
| 0° | 4817 | 4817 | 4817 | 4817 | 4817 | |
| 5° | 4734 | 4728 | 4728 | 4723 | 4723 | 449 |
| 15° | 4427 | 4427 | 4383 | 4338 | 4322 | 1245 |
| 25° | 3837 | 3815 | 3754 | 3620 | 3520 | 1762 |
| 35° | 3113 | 3091 | 2940 | 2718 | 2651 | 1946 |
| 45° | 2389 | 2339 | 2138 | 1960 | 1882 | 1840 |
| 55° | 1660 | 1610 | 1459 | 1286 | 1220 | 1489 |
| 65° | 986 | 930 | 841 | 858 | 713 | 971 |
| 75° | 395 | 368 | 345 | 329 | 362 | 424 |
| 85° | 56 | 61 | 67 | 72 | 78 | 77 |
| 90° | 0 | 0 | 0 | 0 | 0 | |



TEST NUMBER: P563998

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CANDELA DISTRIBUTION (FULL):

| | 0° | 22.5° | 45° | 67.5° | 90° |
|-------|--------|--------|--------|--------|--------|
| 0° | 4817.3 | 4817.3 | 4817.3 | 4817.3 | 4817.3 |
| 2.5° | 4783.9 | 4783.9 | 4783.9 | 4778.3 | 4778.3 |
| 5° | 4733.7 | 4728.2 | 4728.2 | 4722.6 | 4722.6 |
| 7.5° | 4694.7 | 4689.2 | 4683.6 | 4678.0 | 4666.9 |
| 10° | 4639.1 | 4639.1 | 4633.5 | 4605.6 | 4600.1 |
| 12.5° | 4550.0 | 4544.4 | 4522.1 | 4483.1 | 4472.0 |
| 15° | 4427.4 | 4427.4 | 4382.9 | 4338.3 | 4321.6 |
| 17.5° | 4293.8 | 4288.2 | 4232.5 | 4188.0 | 4165.7 |
| 20° | 4149.0 | 4137.8 | 4082.1 | 4009.8 | 3970.8 |
| 22.5° | 3987.5 | 3987.5 | 3920.6 | 3826.0 | 3787.0 |
| 25° | 3837.1 | 3814.8 | 3753.6 | 3619.9 | 3519.7 |
| 27.5° | 3664.5 | 3631.1 | 3564.2 | 3374.9 | 3257.9 |
| 30° | 3475.1 | 3458.4 | 3363.7 | 3118.7 | 3029.6 |
| 32.5° | 3296.9 | 3269.1 | 3168.8 | 2912.6 | 2840.2 |
| 35° | 3113.1 | 3090.8 | 2940.5 | 2717.7 | 2650.9 |
| 37.5° | 2929.3 | 2901.5 | 2712.2 | 2533.9 | 2450.4 |
| 40° | 2745.6 | 2712.2 | 2506.1 | 2344.6 | 2255.5 |
| 42.5° | 2572.9 | 2528.4 | 2327.9 | 2155.2 | 2055.0 |
| 45° | 2389.1 | 2339.0 | 2138.5 | 1960.3 | 1882.4 |
| 47.5° | 2205.4 | 2160.8 | 1977.0 | 1793.2 | 1704.1 |
| 50° | 2010.4 | 1971.5 | 1804.4 | 1620.6 | 1525.9 |
| 52.5° | 1848.9 | 1787.7 | 1626.2 | 1442.4 | 1364.4 |
| 55° | 1659.6 | 1609.5 | 1459.1 | 1286.5 | 1219.6 |
| 57.5° | 1486.9 | 1436.8 | 1297.6 | 1136.1 | 1080.4 |
| 60° | 1325.4 | 1253.0 | 1136.1 | 996.9 | 952.3 |
| 62.5° | 1147.2 | 1091.5 | 991.3 | 874.3 | 930.0 |
| 65° | 985.7 | 930.0 | 840.9 | 857.6 | 712.8 |
| 67.5° | 807.5 | 779.7 | 701.7 | 623.7 | 601.5 |
| 70° | 657.2 | 623.7 | 595.9 | 512.4 | 490.1 |
| 72.5° | 523.5 | 490.1 | 451.1 | 406.5 | 389.8 |
| 75° | 395.4 | 367.6 | 345.3 | 328.6 | 362.0 |
| 77.5° | 272.9 | 261.7 | 245.0 | 228.3 | 222.8 |
| 80° | 178.2 | 172.6 | 167.1 | 161.5 | 155.9 |
| 82.5° | 105.8 | 105.8 | 105.8 | 105.8 | 105.8 |
| 85° | 55.7 | 61.3 | 66.8 | 72.4 | 78.0 |
| 87.5° | 33.4 | 33.4 | 39.0 | 44.6 | 50.1 |
| 90° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

(END OF REPORT)