

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: P564134

Luminaire Tested: FSR-24-4-LD4-4STD-40-UNV-93-87-EDD-90

Issue Date: 7/20/2021

Test Information

Test Method: LM-79-2019
Report Number: P564134
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-93-87-EDD-90
Description: 2X4 FSR TROFFER WITH .156 CLEAR TEMPERED GLASS FIXTURE SIDE AND .375 CLEAR PC ENVIRONMENTAL SIDE LENSES WITH, 90 CRI AND 4000K CCT LEDS
Light Source: -
Ballast/Driver: -

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 12445.0 lumens
Efficiency: N/A
Efficacy: 93.4 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

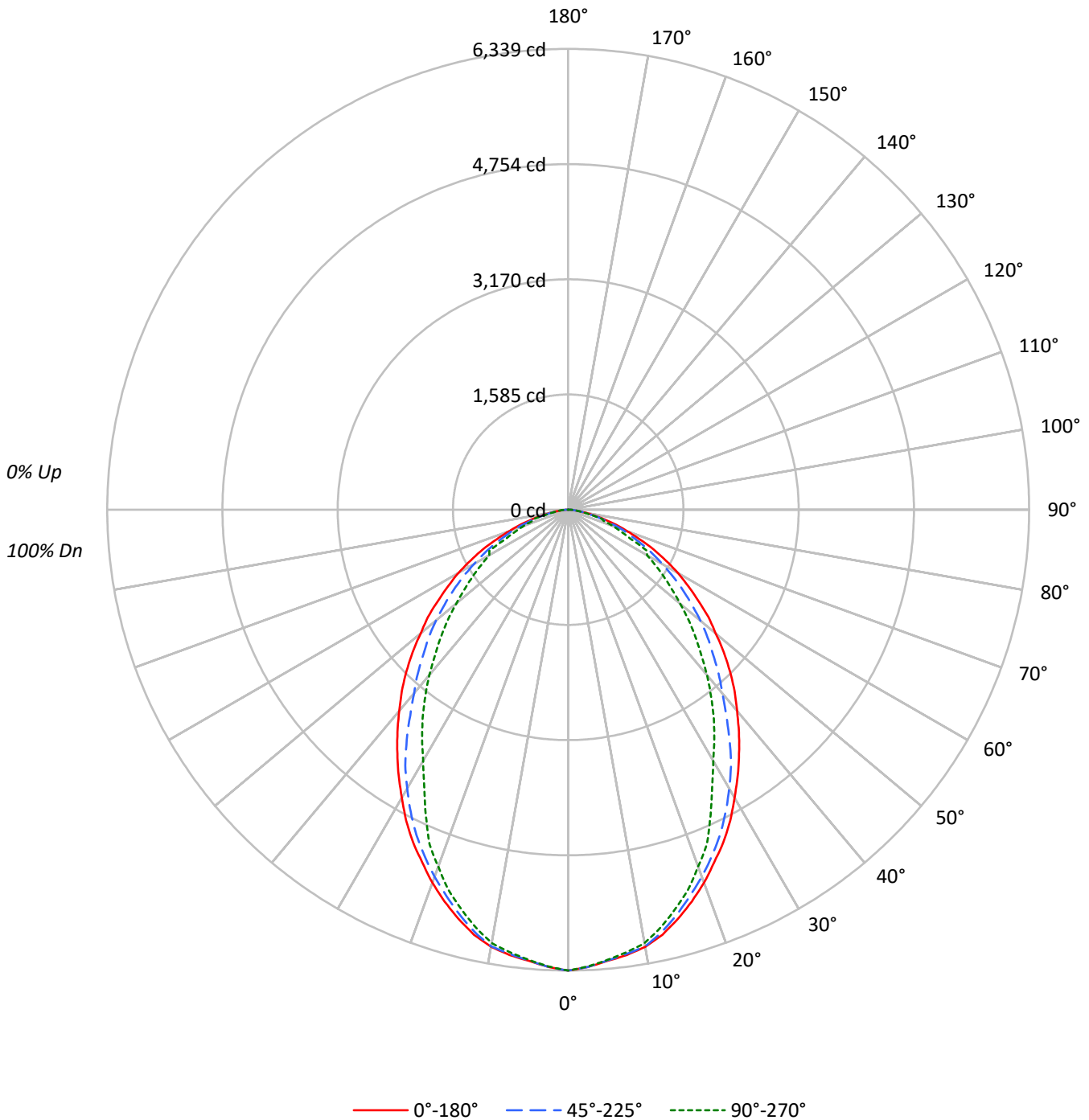
Input Watts (W): 133.2
Input Voltage (V):
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 24 FT



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Luminous Intensity Polar Plot





TEST NUMBER: P564134

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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 | 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° | 8529 | 8529 | 8529 |
| 5° | 8414 | 8404 | 8394 |
| 10° | 8341 | 8331 | 8271 |
| 15° | 8116 | 8034 | 7922 |
| 20° | 7818 | 7692 | 7482 |
| 25° | 7496 | 7333 | 6876 |
| 30° | 7105 | 6877 | 6194 |
| 35° | 6729 | 6356 | 5730 |
| 40° | 6346 | 5792 | 5213 |
| 45° | 5982 | 5355 | 4713 |
| 50° | 5538 | 4970 | 4203 |
| 55° | 5123 | 4504 | 3765 |
| 60° | 4694 | 4023 | 3372 |
| 65° | 4130 | 3523 | 2987 |
| 70° | 3402 | 3085 | 2537 |
| 75° | 2705 | 2362 | 2477 |
| 80° | 1817 | 1704 | 1590 |
| 85° | 1132 | 1357 | 1584 |

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°
 Vertical Angle: 45°
 Luminance: 5982 cd/sqm



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ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|---------|-----------|
| 0°-10° | 590.1 | 4.7 |
| 10°-20° | 1619.5 | 13.0 |
| 20°-30° | 2242.1 | 18.0 |
| 30°-40° | 2390.7 | 19.2 |
| 40°-50° | 2181.0 | 17.5 |
| 50°-60° | 1708.7 | 13.7 |
| 60°-70° | 1113.6 | 8.9 |
| 70°-80° | 493.4 | 4.0 |
| 80°-90° | 105.9 | 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° | 4451.7 | 35.8 |
| 0°-40° | 6842.4 | 55.0 |
| 0°-60° | 10732.1 | 86.2 |
| 0°-90° | 12445.0 | 100.0 |
| 90°-120° | 0.0 | 0.0 |
| 90°-150° | 0.0 | 0.0 |
| 90°-180° | 0.0 | 0.0 |
| 0°-180° | 12445.0 | 100.0 |

CANDELA DISTRIBUTION:

| | 0° | 22.5° | 45° | 67.5° | 90° | Flux |
|-----|------|-------|------|-------|------|------|
| 0° | 6339 | 6339 | 6339 | 6339 | 6339 | |
| 5° | 6229 | 6222 | 6222 | 6215 | 6215 | 591 |
| 15° | 5826 | 5826 | 5768 | 5709 | 5687 | 1638 |
| 25° | 5050 | 5020 | 4940 | 4764 | 4632 | 2318 |
| 35° | 4097 | 4067 | 3870 | 3576 | 3488 | 2561 |
| 45° | 3144 | 3078 | 2814 | 2580 | 2477 | 2422 |
| 55° | 2184 | 2118 | 1920 | 1693 | 1605 | 1959 |
| 65° | 1297 | 1224 | 1107 | 1129 | 938 | 1278 |
| 75° | 520 | 484 | 454 | 432 | 476 | 558 |
| 85° | 73 | 81 | 88 | 95 | 103 | 102 |
| 90° | 0 | 0 | 0 | 0 | 0 | |



TEST NUMBER: P564134

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CANDELA DISTRIBUTION (FULL):

| | 0° | 22.5° | 45° | 67.5° | 90° |
|-------|--------|--------|--------|--------|--------|
| 0° | 6339.3 | 6339.3 | 6339.3 | 6339.3 | 6339.3 |
| 2.5° | 6295.3 | 6295.3 | 6295.3 | 6288.0 | 6288.0 |
| 5° | 6229.4 | 6222.1 | 6222.1 | 6214.7 | 6214.7 |
| 7.5° | 6178.1 | 6170.8 | 6163.4 | 6156.1 | 6141.4 |
| 10° | 6104.8 | 6104.8 | 6097.5 | 6060.8 | 6053.5 |
| 12.5° | 5987.5 | 5980.2 | 5950.9 | 5899.6 | 5884.9 |
| 15° | 5826.3 | 5826.3 | 5767.7 | 5709.0 | 5687.1 |
| 17.5° | 5650.4 | 5643.1 | 5569.8 | 5511.2 | 5481.9 |
| 20° | 5459.9 | 5445.2 | 5371.9 | 5276.7 | 5225.4 |
| 22.5° | 5247.3 | 5247.3 | 5159.4 | 5034.8 | 4983.5 |
| 25° | 5049.5 | 5020.2 | 4939.5 | 4763.6 | 4631.7 |
| 27.5° | 4822.3 | 4778.3 | 4690.4 | 4441.2 | 4287.3 |
| 30° | 4573.1 | 4551.1 | 4426.5 | 4104.1 | 3986.8 |
| 32.5° | 4338.6 | 4301.9 | 4170.0 | 3832.9 | 3737.6 |
| 35° | 4096.7 | 4067.4 | 3869.5 | 3576.4 | 3488.5 |
| 37.5° | 3854.9 | 3818.2 | 3569.1 | 3334.6 | 3224.6 |
| 40° | 3613.0 | 3569.1 | 3297.9 | 3085.4 | 2968.1 |
| 42.5° | 3385.9 | 3327.2 | 3063.4 | 2836.2 | 2704.3 |
| 45° | 3144.0 | 3078.0 | 2814.2 | 2579.7 | 2477.1 |
| 47.5° | 2902.2 | 2843.5 | 2601.7 | 2359.8 | 2242.6 |
| 50° | 2645.7 | 2594.4 | 2374.5 | 2132.6 | 2008.1 |
| 52.5° | 2433.1 | 2352.5 | 2140.0 | 1898.1 | 1795.5 |
| 55° | 2183.9 | 2118.0 | 1920.1 | 1692.9 | 1605.0 |
| 57.5° | 1956.8 | 1890.8 | 1707.6 | 1495.1 | 1421.8 |
| 60° | 1744.2 | 1649.0 | 1495.1 | 1311.8 | 1253.2 |
| 62.5° | 1509.7 | 1436.4 | 1304.5 | 1150.6 | 1223.9 |
| 65° | 1297.2 | 1223.9 | 1106.6 | 1128.6 | 938.1 |
| 67.5° | 1062.7 | 1026.0 | 923.4 | 820.8 | 791.5 |
| 70° | 864.8 | 820.8 | 784.2 | 674.2 | 644.9 |
| 72.5° | 688.9 | 644.9 | 593.6 | 535.0 | 513.0 |
| 75° | 520.3 | 483.7 | 454.4 | 432.4 | 476.4 |
| 77.5° | 359.1 | 344.4 | 322.5 | 300.5 | 293.1 |
| 80° | 234.5 | 227.2 | 219.9 | 212.5 | 205.2 |
| 82.5° | 139.2 | 139.2 | 139.2 | 139.2 | 139.2 |
| 85° | 73.3 | 80.6 | 87.9 | 95.3 | 102.6 |
| 87.5° | 44.0 | 44.0 | 51.3 | 58.6 | 66.0 |
| 90° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

(END OF REPORT)