

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: P590749

Luminaire Tested: FSR-24-2-LD4-4HI-40-UNV-81-84-EDD

Issue Date: 12/8/2021

Test Information

Test Method: LM-79-2019
Report Number: P590749
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-LD4-4HI-40-UNV-81-84-EDD
Description: 2X2 FSR TROFFER WITH .156 CLEAR PC FIXTURE SIDE AND .125 CLEAR PC ENVIRONMENTAL SI
LENSES WITH, 80 CRI AND 4000K CCT LEDS
Light Source: -
Ballast/Driver: -

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 9185.0 lumens
Efficiency: N/A
Efficacy: 106.3 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

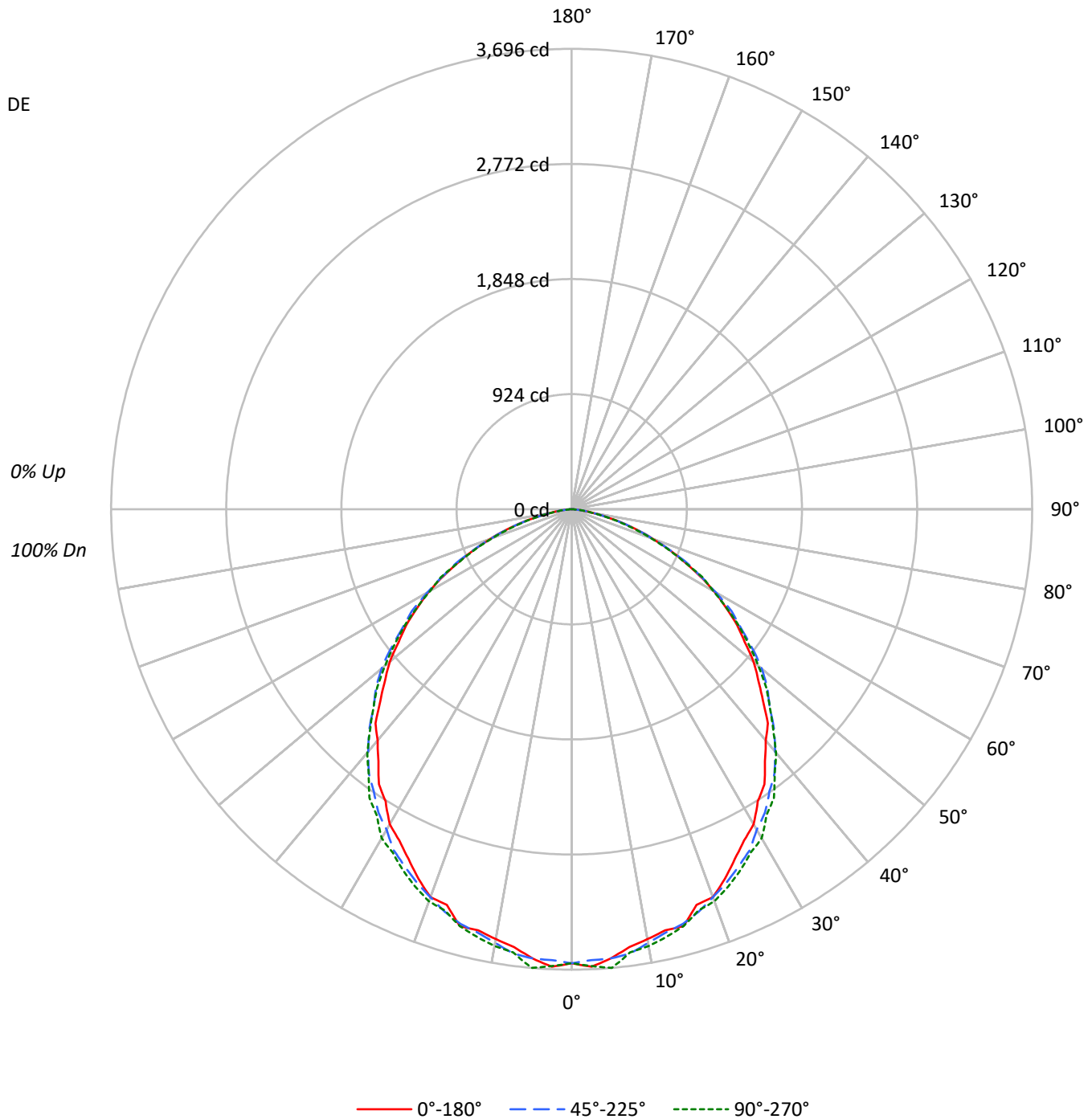
Input Watts (W): 86.4
Input Voltage (V):
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 24 FT



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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° | 9807 | 9807 | 9807 |
| 5° | 9775 | 9778 | 9984 |
| 10° | 9576 | 9660 | 9728 |
| 15° | 9652 | 9600 | 9653 |
| 20° | 9489 | 9489 | 9590 |
| 25° | 9197 | 9399 | 9502 |
| 30° | 9071 | 9230 | 9476 |
| 35° | 8857 | 9089 | 9293 |
| 40° | 8513 | 8923 | 8962 |
| 45° | 8255 | 8549 | 8562 |
| 50° | 7984 | 8344 | 8185 |
| 55° | 7607 | 7755 | 7700 |
| 60° | 7114 | 7184 | 7055 |
| 65° | 6343 | 6505 | 6298 |
| 70° | 5442 | 5461 | 5309 |
| 75° | 4311 | 4300 | 4134 |
| 80° | 2887 | 2808 | 2698 |
| 85° | 1568 | 1553 | 1454 |

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 67.5°
 Vertical Angle: 45°
 Luminance: 8769 cd/sqm



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ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10° | 342.8 | 3.7 |
| 10°-20° | 971.6 | 10.6 |
| 20°-30° | 1455.6 | 15.8 |
| 30°-40° | 1725.2 | 18.8 |
| 40°-50° | 1728.4 | 18.8 |
| 50°-60° | 1467.1 | 16.0 |
| 60°-70° | 989.1 | 10.8 |
| 70°-80° | 434.6 | 4.7 |
| 80°-90° | 70.6 | 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° | 2770.0 | 30.2 |
| 0°-40° | 4495.2 | 48.9 |
| 0°-60° | 7690.6 | 83.7 |
| 0°-90° | 9185.0 | 100.0 |
| 90°-120° | 0.0 | 0.0 |
| 90°-150° | 0.0 | 0.0 |
| 90°-180° | 0.0 | 0.0 |
| 0°-180° | 9185.0 | 100.0 |

CANDELA DISTRIBUTION:

| | 0° | 22.5° | 45° | 67.5° | 90° | Flux |
|-----|------|-------|------|-------|------|------|
| 0° | 3644 | 3644 | 3644 | 3644 | 3644 | |
| 5° | 3618 | 3610 | 3620 | 3609 | 3696 | 341 |
| 15° | 3465 | 3425 | 3446 | 3464 | 3465 | 965 |
| 25° | 3098 | 3114 | 3165 | 3207 | 3200 | 1432 |
| 35° | 2696 | 2704 | 2767 | 2831 | 2829 | 1674 |
| 45° | 2169 | 2210 | 2246 | 2304 | 2250 | 1678 |
| 55° | 1622 | 1611 | 1653 | 1642 | 1641 | 1442 |
| 65° | 996 | 983 | 1022 | 982 | 989 | 991 |
| 75° | 415 | 406 | 414 | 384 | 398 | 444 |
| 85° | 51 | 49 | 50 | 49 | 47 | 74 |
| 90° | 0 | 0 | 0 | 0 | 0 | |

TEST NUMBER: P590749

CATALOG NUMBER: FSR-24-2-LD4-4HI-40-UNV-81-84-EDD

CANDELA DISTRIBUTION (FULL):

| | 0° | 22.5° | 45° | 67.5° | 90° |
|-------|--------|--------|--------|--------|--------|
| 0° | 3644.4 | 3644.4 | 3644.4 | 3644.4 | 3644.4 |
| 2.5° | 3675.9 | 3648.1 | 3622.3 | 3652.4 | 3670.7 |
| 5° | 3618.5 | 3610.0 | 3619.9 | 3609.1 | 3696.1 |
| 7.5° | 3544.1 | 3576.6 | 3595.4 | 3583.7 | 3588.9 |
| 10° | 3504.6 | 3493.3 | 3535.2 | 3564.4 | 3560.1 |
| 12.5° | 3462.3 | 3479.2 | 3481.6 | 3513.1 | 3515.9 |
| 15° | 3464.6 | 3424.6 | 3445.8 | 3463.7 | 3465.1 |
| 17.5° | 3330.1 | 3373.3 | 3387.9 | 3428.9 | 3378.0 |
| 20° | 3313.6 | 3282.1 | 3313.6 | 3355.5 | 3348.9 |
| 22.5° | 3212.4 | 3177.1 | 3244.9 | 3282.1 | 3279.7 |
| 25° | 3097.6 | 3114.5 | 3165.4 | 3206.8 | 3200.2 |
| 27.5° | 2996.9 | 3016.7 | 3089.1 | 3146.1 | 3109.4 |
| 30° | 2919.3 | 2909.4 | 2970.6 | 3021.4 | 3049.6 |
| 32.5° | 2780.5 | 2816.2 | 2887.7 | 2938.1 | 2911.3 |
| 35° | 2696.2 | 2704.2 | 2766.8 | 2830.8 | 2828.9 |
| 37.5° | 2548.9 | 2586.1 | 2674.1 | 2692.0 | 2675.5 |
| 40° | 2423.3 | 2460.5 | 2540.0 | 2559.3 | 2551.3 |
| 42.5° | 2330.6 | 2337.2 | 2405.4 | 2427.5 | 2392.3 |
| 45° | 2169.2 | 2209.7 | 2246.4 | 2304.3 | 2249.7 |
| 47.5° | 2031.8 | 2050.6 | 2129.7 | 2145.2 | 2116.5 |
| 50° | 1907.1 | 1913.7 | 1993.2 | 1973.9 | 1955.1 |
| 52.5° | 1750.4 | 1778.2 | 1822.9 | 1819.1 | 1797.0 |
| 55° | 1621.5 | 1610.7 | 1653.0 | 1641.7 | 1641.3 |
| 57.5° | 1466.7 | 1485.5 | 1520.3 | 1502.5 | 1473.7 |
| 60° | 1321.8 | 1322.2 | 1334.9 | 1314.7 | 1310.9 |
| 62.5° | 1160.4 | 1166.0 | 1168.8 | 1143.9 | 1184.4 |
| 65° | 996.1 | 983.0 | 1021.6 | 982.5 | 989.1 |
| 67.5° | 845.1 | 851.7 | 847.9 | 823.5 | 832.9 |
| 70° | 691.7 | 700.2 | 694.1 | 666.3 | 674.8 |
| 72.5° | 551.5 | 541.1 | 547.7 | 512.9 | 528.9 |
| 75° | 414.6 | 406.1 | 413.6 | 384.4 | 397.6 |
| 77.5° | 282.3 | 288.9 | 284.2 | 268.7 | 277.6 |
| 80° | 186.3 | 181.2 | 181.2 | 172.2 | 174.1 |
| 82.5° | 108.7 | 103.5 | 102.1 | 99.3 | 103.5 |
| 85° | 50.8 | 49.4 | 50.3 | 48.9 | 47.1 |
| 87.5° | 18.4 | 18.8 | 18.8 | 17.9 | 16.9 |
| 90° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

(END OF REPORT)