

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: P563496

Luminaire Tested: FSR-24-4-LD4-3STD-35-UNV-93-88-EDD-90

Issue Date: 7/20/2021

Test Information

Test Method: LM-79-2019
Report Number: P563496
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-LD4-3STD-35-UNV-93-88-EDD-90
Description: 2X4 FSR TROFFER WITH .156 CLEAR TEMPERED GLASS FIXTURE SIDE AND .500 CLEAR PC ENVIRONMENTAL SIDE LENSES WITH, 90 CRI AND 3500K CCT LEDS
Light Source: -
Ballast/Driver: -

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 8288.0 lumens
Efficiency: N/A
Efficacy: 83.0 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

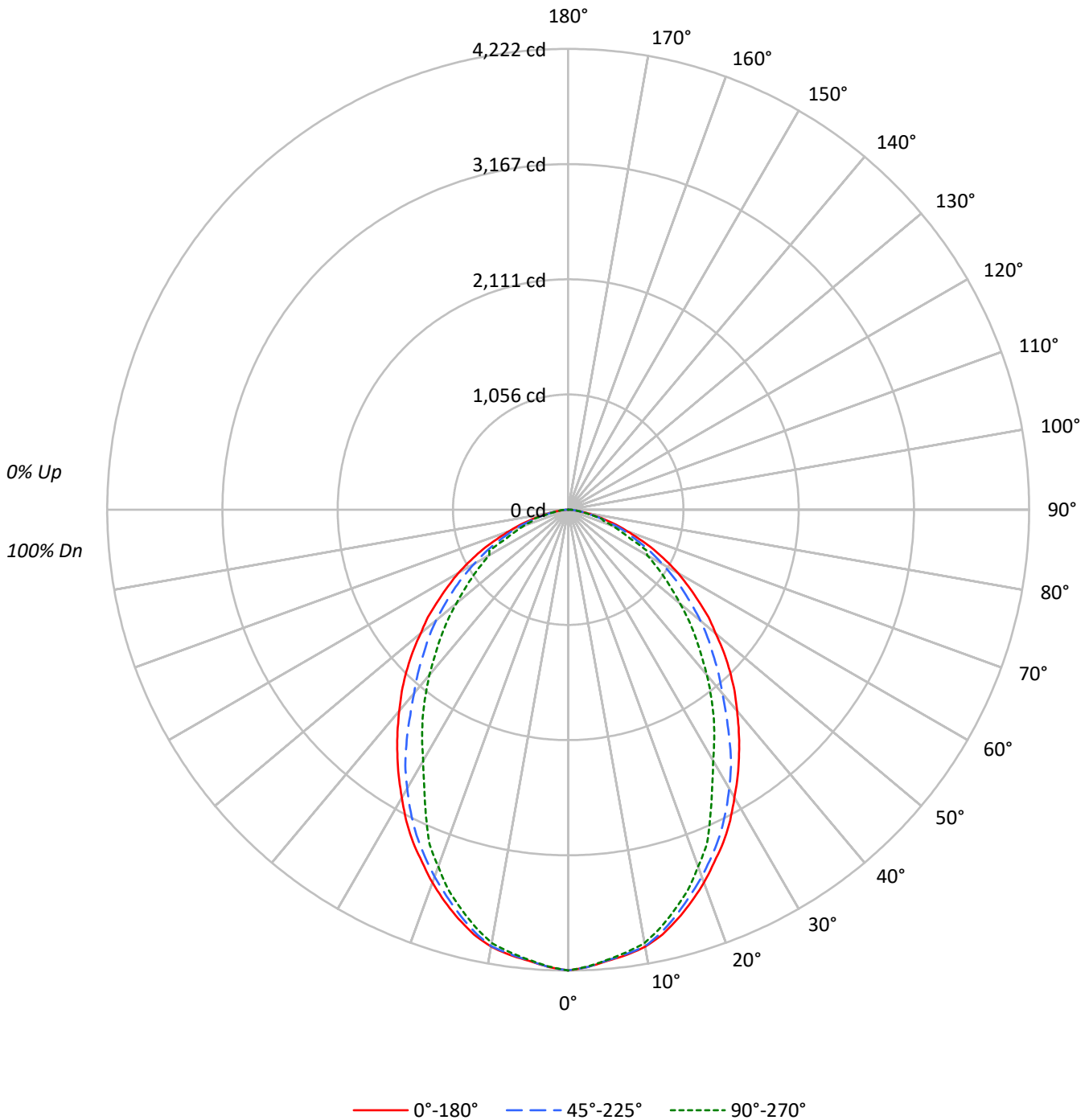
Input Watts (W): 99.9
Input Voltage (V):
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 24 FT



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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° | 5680 | 5680 | 5680 |
| 5° | 5603 | 5597 | 5590 |
| 10° | 5555 | 5548 | 5508 |
| 15° | 5405 | 5350 | 5276 |
| 20° | 5206 | 5122 | 4983 |
| 25° | 4992 | 4884 | 4579 |
| 30° | 4732 | 4580 | 4125 |
| 35° | 4481 | 4233 | 3816 |
| 40° | 4226 | 3858 | 3472 |
| 45° | 3984 | 3566 | 3139 |
| 50° | 3688 | 3310 | 2799 |
| 55° | 3412 | 3000 | 2507 |
| 60° | 3126 | 2679 | 2246 |
| 65° | 2750 | 2346 | 1989 |
| 70° | 2266 | 2054 | 1690 |
| 75° | 1801 | 1573 | 1649 |
| 80° | 1210 | 1134 | 1059 |
| 85° | 753 | 905 | 1054 |

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°
 Vertical Angle: 45°
 Luminance: 3984 cd/sqm



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ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10° | 393.0 | 4.7 |
| 10°-20° | 1078.5 | 13.0 |
| 20°-30° | 1493.2 | 18.0 |
| 30°-40° | 1592.1 | 19.2 |
| 40°-50° | 1452.5 | 17.5 |
| 50°-60° | 1137.9 | 13.7 |
| 60°-70° | 741.6 | 8.9 |
| 70°-80° | 328.6 | 4.0 |
| 80°-90° | 70.5 | 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° | 2964.7 | 35.8 |
| 0°-40° | 4556.8 | 55.0 |
| 0°-60° | 7147.2 | 86.2 |
| 0°-90° | 8288.0 | 100.0 |
| 90°-120° | 0.0 | 0.0 |
| 90°-150° | 0.0 | 0.0 |
| 90°-180° | 0.0 | 0.0 |
| 0°-180° | 8288.0 | 100.0 |

CANDELA DISTRIBUTION:

| | 0° | 22.5° | 45° | 67.5° | 90° | Flux |
|-----|------|-------|------|-------|------|------|
| 0° | 4222 | 4222 | 4222 | 4222 | 4222 | |
| 5° | 4149 | 4144 | 4144 | 4139 | 4139 | 394 |
| 15° | 3880 | 3880 | 3841 | 3802 | 3787 | 1091 |
| 25° | 3363 | 3343 | 3290 | 3172 | 3085 | 1544 |
| 35° | 2728 | 2709 | 2577 | 2382 | 2323 | 1706 |
| 45° | 2094 | 2050 | 1874 | 1718 | 1650 | 1613 |
| 55° | 1454 | 1410 | 1279 | 1127 | 1069 | 1305 |
| 65° | 864 | 815 | 737 | 752 | 625 | 851 |
| 75° | 346 | 322 | 303 | 288 | 317 | 371 |
| 85° | 49 | 54 | 59 | 63 | 68 | 68 |
| 90° | 0 | 0 | 0 | 0 | 0 | |



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CANDELA DISTRIBUTION (FULL):

| | 0° | 22.5° | 45° | 67.5° | 90° |
|-------|--------|--------|--------|--------|--------|
| 0° | 4221.8 | 4221.8 | 4221.8 | 4221.8 | 4221.8 |
| 2.5° | 4192.5 | 4192.5 | 4192.5 | 4187.6 | 4187.6 |
| 5° | 4148.6 | 4143.7 | 4143.7 | 4138.8 | 4138.8 |
| 7.5° | 4114.4 | 4109.5 | 4104.7 | 4099.8 | 4090.0 |
| 10° | 4065.6 | 4065.6 | 4060.7 | 4036.3 | 4031.4 |
| 12.5° | 3987.5 | 3982.6 | 3963.1 | 3929.0 | 3919.2 |
| 15° | 3880.1 | 3880.1 | 3841.1 | 3802.1 | 3787.4 |
| 17.5° | 3763.0 | 3758.1 | 3709.3 | 3670.3 | 3650.8 |
| 20° | 3636.1 | 3626.4 | 3577.5 | 3514.1 | 3479.9 |
| 22.5° | 3494.6 | 3494.6 | 3436.0 | 3353.0 | 3318.9 |
| 25° | 3362.8 | 3343.3 | 3289.6 | 3172.4 | 3084.6 |
| 27.5° | 3211.5 | 3182.2 | 3123.6 | 2957.7 | 2855.2 |
| 30° | 3045.6 | 3030.9 | 2947.9 | 2733.2 | 2655.1 |
| 32.5° | 2889.4 | 2865.0 | 2777.1 | 2552.6 | 2489.2 |
| 35° | 2728.3 | 2708.8 | 2577.0 | 2381.8 | 2323.2 |
| 37.5° | 2567.2 | 2542.8 | 2376.9 | 2220.7 | 2147.5 |
| 40° | 2406.2 | 2376.9 | 2196.3 | 2054.8 | 1976.7 |
| 42.5° | 2254.9 | 2215.8 | 2040.1 | 1888.8 | 1801.0 |
| 45° | 2093.8 | 2049.9 | 1874.2 | 1718.0 | 1649.7 |
| 47.5° | 1932.8 | 1893.7 | 1732.6 | 1571.6 | 1493.5 |
| 50° | 1761.9 | 1727.8 | 1581.3 | 1420.3 | 1337.3 |
| 52.5° | 1620.4 | 1566.7 | 1425.2 | 1264.1 | 1195.8 |
| 55° | 1454.4 | 1410.5 | 1278.7 | 1127.4 | 1068.9 |
| 57.5° | 1303.1 | 1259.2 | 1137.2 | 995.7 | 946.9 |
| 60° | 1161.6 | 1098.2 | 995.7 | 873.6 | 834.6 |
| 62.5° | 1005.4 | 956.6 | 868.8 | 766.3 | 815.1 |
| 65° | 863.9 | 815.1 | 737.0 | 751.6 | 624.7 |
| 67.5° | 707.7 | 683.3 | 615.0 | 546.6 | 527.1 |
| 70° | 575.9 | 546.6 | 522.2 | 449.0 | 429.5 |
| 72.5° | 458.8 | 429.5 | 395.3 | 356.3 | 341.6 |
| 75° | 346.5 | 322.1 | 302.6 | 288.0 | 317.2 |
| 77.5° | 239.2 | 229.4 | 214.8 | 200.1 | 195.2 |
| 80° | 156.2 | 151.3 | 146.4 | 141.5 | 136.7 |
| 82.5° | 92.7 | 92.7 | 92.7 | 92.7 | 92.7 |
| 85° | 48.8 | 53.7 | 58.6 | 63.4 | 68.3 |
| 87.5° | 29.3 | 29.3 | 34.2 | 39.0 | 43.9 |
| 90° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

(END OF REPORT)