

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: P590931

Luminaire Tested: FSR-24-2-LD4-4STD-35-UNV-93-96-EDD

Issue Date: 12/8/2021

Test Information

Test Method: LM-79-2019
Report Number: P590931
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-LD4-4STD-35-UNV-93-96-EDD
Description: 2X2 FSR TROFFER WITH .156 CLEAR TEMPERED GLASS FIXTURE SIDE AND .250 CLEAR TEMPER
GLASS ENVIRONMENTAL SIDE LENSES WITH, 80 CRI AND 3500K CCT LEDS
Light Source: -
Ballast/Driver: -

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 7752.0 lumens
Efficiency: N/A
Efficacy: 116.4 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

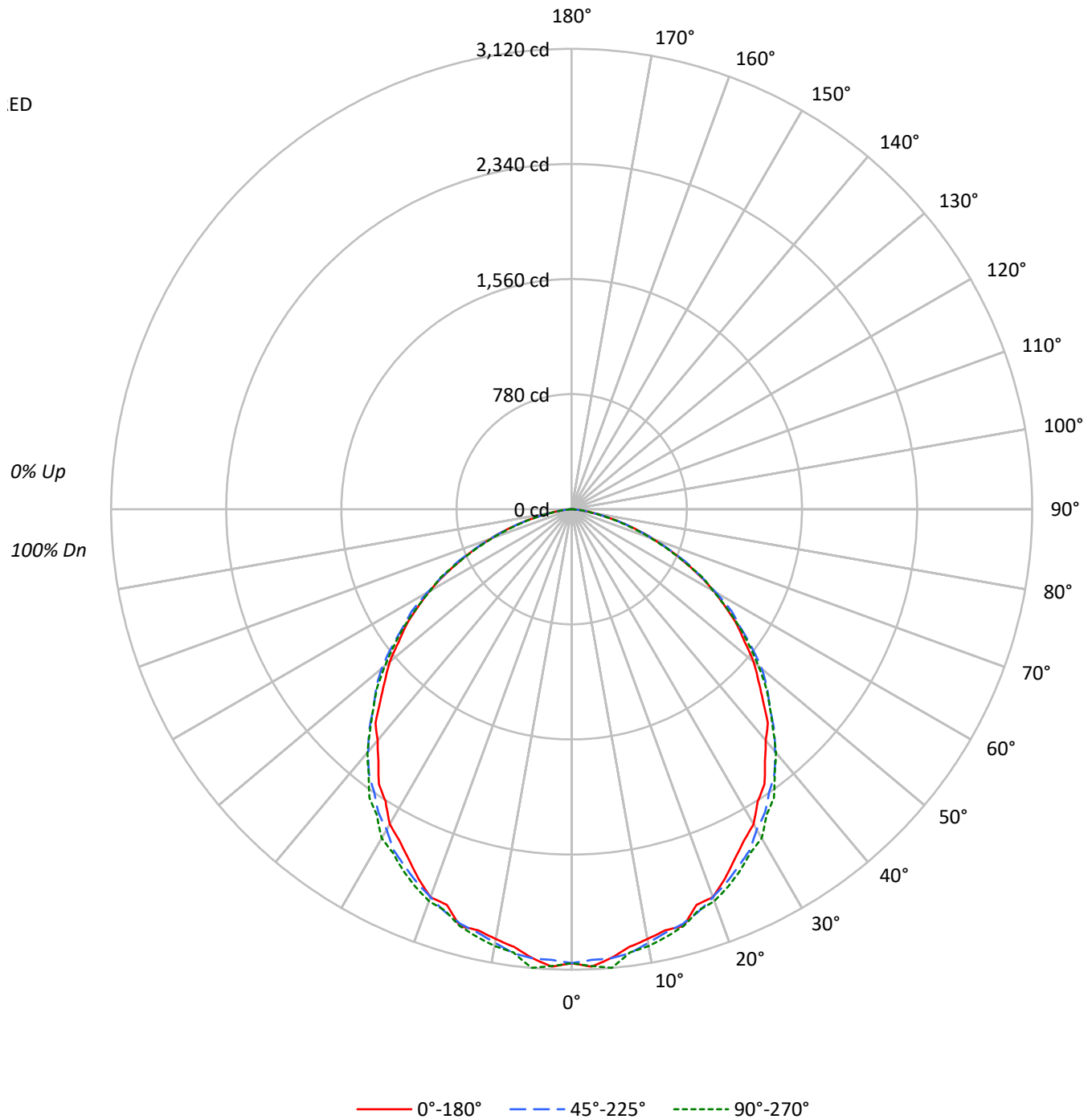
Input Watts (W): 66.6
Input Voltage (V):
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 24 FT



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Luminous Intensity Polar Plot





TEST NUMBER: P590931

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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 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 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° | 8277 | 8277 | 8277 |
| 5° | 8250 | 8253 | 8427 |
| 10° | 8082 | 8153 | 8210 |
| 15° | 8146 | 8102 | 8147 |
| 20° | 8009 | 8009 | 8094 |
| 25° | 7762 | 7932 | 8019 |
| 30° | 7656 | 7790 | 7998 |
| 35° | 7476 | 7671 | 7843 |
| 40° | 7184 | 7530 | 7564 |
| 45° | 6967 | 7215 | 7226 |
| 50° | 6738 | 7043 | 6908 |
| 55° | 6420 | 6545 | 6499 |
| 60° | 6004 | 6064 | 5955 |
| 65° | 5353 | 5490 | 5316 |
| 70° | 4593 | 4609 | 4481 |
| 75° | 3638 | 3630 | 3489 |
| 80° | 2438 | 2369 | 2276 |
| 85° | 1325 | 1312 | 1226 |

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 67.5°
 Vertical Angle: 45°
 Luminance: 7401 cd/sqm



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ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10° | 289.3 | 3.7 |
| 10°-20° | 820.0 | 10.6 |
| 20°-30° | 1228.5 | 15.8 |
| 30°-40° | 1456.0 | 18.8 |
| 40°-50° | 1458.7 | 18.8 |
| 50°-60° | 1238.2 | 16.0 |
| 60°-70° | 834.8 | 10.8 |
| 70°-80° | 366.8 | 4.7 |
| 80°-90° | 59.6 | 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° | 2337.8 | 30.2 |
| 0°-40° | 3793.8 | 48.9 |
| 0°-60° | 6490.8 | 83.7 |
| 0°-90° | 7752.0 | 100.0 |
| 90°-120° | 0.0 | 0.0 |
| 90°-150° | 0.0 | 0.0 |
| 90°-180° | 0.0 | 0.0 |
| 0°-180° | 7752.0 | 100.0 |

CANDELA DISTRIBUTION:

| | 0° | 22.5° | 45° | 67.5° | 90° | Flux |
|-----|------|-------|------|-------|------|------|
| 0° | 3076 | 3076 | 3076 | 3076 | 3076 | |
| 5° | 3054 | 3047 | 3055 | 3046 | 3120 | 288 |
| 15° | 2924 | 2890 | 2908 | 2923 | 2924 | 815 |
| 25° | 2614 | 2629 | 2672 | 2706 | 2701 | 1209 |
| 35° | 2276 | 2282 | 2335 | 2389 | 2388 | 1413 |
| 45° | 1831 | 1865 | 1896 | 1945 | 1899 | 1416 |
| 55° | 1368 | 1359 | 1395 | 1386 | 1385 | 1217 |
| 65° | 841 | 830 | 862 | 829 | 835 | 836 |
| 75° | 350 | 343 | 349 | 324 | 336 | 375 |
| 85° | 43 | 42 | 42 | 41 | 40 | 62 |
| 90° | 0 | 0 | 0 | 0 | 0 | |



TEST NUMBER: P590931

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CANDELA DISTRIBUTION (FULL):

| | 0° | 22.5° | 45° | 67.5° | 90° |
|-------|--------|--------|--------|--------|--------|
| 0° | 3075.8 | 3075.8 | 3075.8 | 3075.8 | 3075.8 |
| 2.5° | 3102.4 | 3079.0 | 3057.1 | 3082.5 | 3098.0 |
| 5° | 3054.0 | 3046.8 | 3055.1 | 3046.0 | 3119.5 |
| 7.5° | 2991.2 | 3018.6 | 3034.5 | 3024.6 | 3028.9 |
| 10° | 2957.8 | 2948.3 | 2983.7 | 3008.3 | 3004.7 |
| 12.5° | 2922.1 | 2936.4 | 2938.4 | 2965.0 | 2967.4 |
| 15° | 2924.1 | 2890.3 | 2908.2 | 2923.3 | 2924.5 |
| 17.5° | 2810.5 | 2847.0 | 2859.4 | 2893.9 | 2851.0 |
| 20° | 2796.6 | 2770.0 | 2796.6 | 2832.0 | 2826.4 |
| 22.5° | 2711.2 | 2681.4 | 2738.6 | 2770.0 | 2768.0 |
| 25° | 2614.3 | 2628.6 | 2671.5 | 2706.5 | 2700.9 |
| 27.5° | 2529.3 | 2546.0 | 2607.2 | 2655.2 | 2624.3 |
| 30° | 2463.8 | 2455.5 | 2507.1 | 2550.0 | 2573.8 |
| 32.5° | 2346.7 | 2376.8 | 2437.2 | 2479.7 | 2457.1 |
| 35° | 2275.6 | 2282.3 | 2335.1 | 2389.2 | 2387.6 |
| 37.5° | 2151.3 | 2182.6 | 2256.9 | 2272.0 | 2258.1 |
| 40° | 2045.2 | 2076.6 | 2143.7 | 2160.0 | 2153.3 |
| 42.5° | 1967.0 | 1972.6 | 2030.1 | 2048.8 | 2019.0 |
| 45° | 1830.8 | 1864.9 | 1895.9 | 1944.8 | 1898.7 |
| 47.5° | 1714.8 | 1730.7 | 1797.4 | 1810.5 | 1786.3 |
| 50° | 1609.6 | 1615.1 | 1682.3 | 1666.0 | 1650.1 |
| 52.5° | 1477.3 | 1500.8 | 1538.5 | 1535.3 | 1516.7 |
| 55° | 1368.5 | 1359.4 | 1395.1 | 1385.6 | 1385.2 |
| 57.5° | 1237.9 | 1253.7 | 1283.1 | 1268.0 | 1243.8 |
| 60° | 1115.5 | 1115.9 | 1126.7 | 1109.6 | 1106.4 |
| 62.5° | 979.3 | 984.1 | 986.5 | 965.4 | 999.6 |
| 65° | 840.7 | 829.6 | 862.2 | 829.2 | 834.8 |
| 67.5° | 713.3 | 718.8 | 715.6 | 695.0 | 702.9 |
| 70° | 583.8 | 590.9 | 585.8 | 562.3 | 569.5 |
| 72.5° | 465.4 | 456.7 | 462.3 | 432.9 | 446.4 |
| 75° | 349.9 | 342.7 | 349.1 | 324.5 | 335.6 |
| 77.5° | 238.3 | 243.8 | 239.9 | 226.8 | 234.3 |
| 80° | 157.3 | 152.9 | 152.9 | 145.4 | 146.9 |
| 82.5° | 91.7 | 87.4 | 86.2 | 83.8 | 87.4 |
| 85° | 42.9 | 41.7 | 42.5 | 41.3 | 39.7 |
| 87.5° | 15.5 | 15.9 | 15.9 | 15.1 | 14.3 |
| 90° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

(END OF REPORT)