

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: P590448

Luminaire Tested: FSR-24-2-LD4-3HI-35-UNV-93-87-EDD

Issue Date: 12/8/2021

Test Information

Test Method: LM-79-2019
Report Number: P590448
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-LD4-3HI-35-UNV-93-87-EDD
Description: 2X2 FSR TROFFER WITH .156 CLEAR TEMPERED GLASS FIXTURE SIDE AND .375 CLEAR PC ENVIRONMENTAL SIDE LENSES WITH, 80 CRI AND 3500K CCT LEDS
Light Source: -
Ballast/Driver: -

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 6746.0 lumens
Efficiency: N/A
Efficacy: 104.1 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

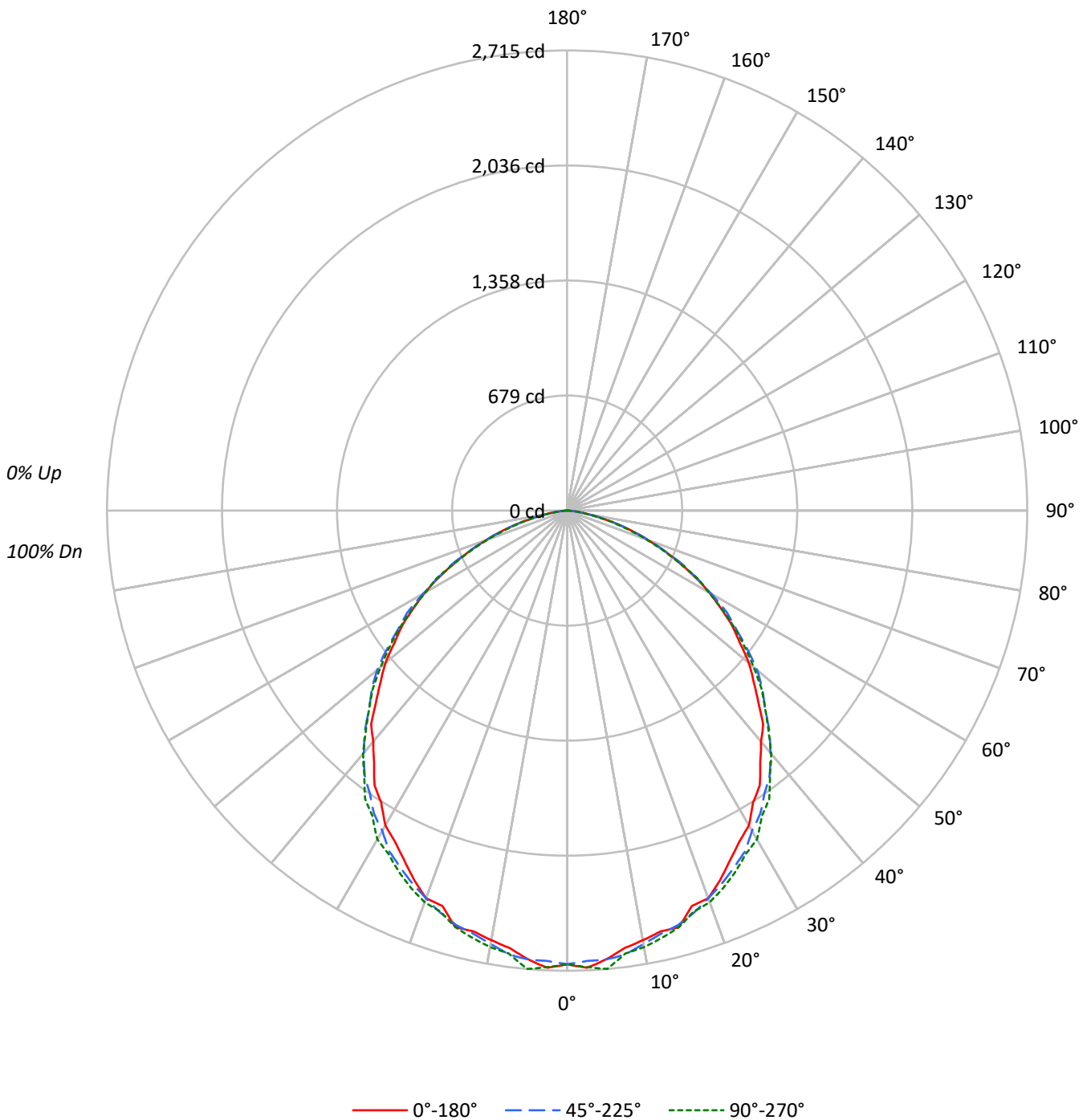
Input Watts (W): 64.8
Input Voltage (V):
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 24 FT



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Luminous Intensity Polar Plot





TEST NUMBER: P590448

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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 | 0 | | |
| RCR | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | 119 | 119 | 119 | 119 | 116 | 116 | 116 | 116 | 111 | 111 | 111 | 106 | 106 | 106 | 102 | 102 | 102 | 100 | | | | | 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° | 7203 | 7203 | 7203 |
| 5° | 7179 | 7182 | 7333 |
| 10° | 7033 | 7095 | 7145 |
| 15° | 7089 | 7051 | 7090 |
| 20° | 6969 | 6969 | 7044 |
| 25° | 6755 | 6903 | 6979 |
| 30° | 6662 | 6779 | 6960 |
| 35° | 6505 | 6676 | 6825 |
| 40° | 6252 | 6553 | 6582 |
| 45° | 6063 | 6279 | 6288 |
| 50° | 5864 | 6128 | 6012 |
| 55° | 5587 | 5696 | 5655 |
| 60° | 5225 | 5277 | 5182 |
| 65° | 4658 | 4777 | 4625 |
| 70° | 3997 | 4011 | 3899 |
| 75° | 3166 | 3159 | 3036 |
| 80° | 2122 | 2063 | 1982 |
| 85° | 1152 | 1142 | 1068 |

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 67.5°
 Vertical Angle: 45°
 Luminance: 6441 cd/sqm



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ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10° | 251.8 | 3.7 |
| 10°-20° | 713.6 | 10.6 |
| 20°-30° | 1069.1 | 15.8 |
| 30°-40° | 1267.1 | 18.8 |
| 40°-50° | 1269.4 | 18.8 |
| 50°-60° | 1077.5 | 16.0 |
| 60°-70° | 726.5 | 10.8 |
| 70°-80° | 319.2 | 4.7 |
| 80°-90° | 51.9 | 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° | 2034.4 | 30.2 |
| 0°-40° | 3301.5 | 48.9 |
| 0°-60° | 5648.4 | 83.7 |
| 0°-90° | 6746.0 | 100.0 |
| 90°-120° | 0.0 | 0.0 |
| 90°-150° | 0.0 | 0.0 |
| 90°-180° | 0.0 | 0.0 |
| 0°-180° | 6746.0 | 100.0 |

CANDELA DISTRIBUTION:

| | 0° | 22.5° | 45° | 67.5° | 90° | Flux |
|-----|------|-------|------|-------|------|------|
| 0° | 2677 | 2677 | 2677 | 2677 | 2677 | |
| 5° | 2658 | 2651 | 2659 | 2651 | 2715 | 251 |
| 15° | 2545 | 2515 | 2531 | 2544 | 2545 | 709 |
| 25° | 2275 | 2288 | 2325 | 2355 | 2350 | 1052 |
| 35° | 1980 | 1986 | 2032 | 2079 | 2078 | 1230 |
| 45° | 1593 | 1623 | 1650 | 1692 | 1652 | 1232 |
| 55° | 1191 | 1183 | 1214 | 1206 | 1205 | 1059 |
| 65° | 732 | 722 | 750 | 722 | 726 | 728 |
| 75° | 304 | 298 | 304 | 282 | 292 | 326 |
| 85° | 37 | 36 | 37 | 36 | 35 | 54 |
| 90° | 0 | 0 | 0 | 0 | 0 | |



TEST NUMBER: P590448

CATALOG NUMBER: FSR-24-2-LD4-3HI-35-UNV-93-87-EDD

CANDELA DISTRIBUTION (FULL):

| | 0° | 22.5° | 45° | 67.5° | 90° |
|-------|--------|--------|--------|--------|--------|
| 0° | 2676.6 | 2676.6 | 2676.6 | 2676.6 | 2676.6 |
| 2.5° | 2699.8 | 2679.4 | 2660.4 | 2682.5 | 2696.0 |
| 5° | 2657.6 | 2651.4 | 2658.7 | 2650.7 | 2714.7 |
| 7.5° | 2603.0 | 2626.9 | 2640.7 | 2632.1 | 2635.9 |
| 10° | 2574.0 | 2565.7 | 2596.5 | 2617.9 | 2614.8 |
| 12.5° | 2542.9 | 2555.3 | 2557.1 | 2580.2 | 2582.3 |
| 15° | 2544.6 | 2515.2 | 2530.8 | 2543.9 | 2545.0 |
| 17.5° | 2445.8 | 2477.6 | 2488.3 | 2518.4 | 2481.0 |
| 20° | 2433.7 | 2410.5 | 2433.7 | 2464.4 | 2459.6 |
| 22.5° | 2359.4 | 2333.5 | 2383.2 | 2410.5 | 2408.8 |
| 25° | 2275.1 | 2287.5 | 2324.8 | 2355.2 | 2350.4 |
| 27.5° | 2201.1 | 2215.6 | 2268.8 | 2310.7 | 2283.7 |
| 30° | 2144.1 | 2136.8 | 2181.7 | 2219.1 | 2239.8 |
| 32.5° | 2042.1 | 2068.4 | 2120.9 | 2157.9 | 2138.2 |
| 35° | 1980.3 | 1986.1 | 2032.1 | 2079.1 | 2077.7 |
| 37.5° | 1872.1 | 1899.4 | 1964.0 | 1977.2 | 1965.1 |
| 40° | 1779.8 | 1807.1 | 1865.5 | 1879.7 | 1873.8 |
| 42.5° | 1711.7 | 1716.6 | 1766.7 | 1782.9 | 1757.0 |
| 45° | 1593.2 | 1622.9 | 1649.9 | 1692.4 | 1652.3 |
| 47.5° | 1492.3 | 1506.1 | 1564.2 | 1575.6 | 1554.5 |
| 50° | 1400.7 | 1405.5 | 1463.9 | 1449.8 | 1436.0 |
| 52.5° | 1285.6 | 1306.0 | 1338.8 | 1336.1 | 1319.8 |
| 55° | 1190.9 | 1183.0 | 1214.1 | 1205.8 | 1205.4 |
| 57.5° | 1077.2 | 1091.0 | 1116.6 | 1103.5 | 1082.4 |
| 60° | 970.8 | 971.1 | 980.5 | 965.6 | 962.8 |
| 62.5° | 852.2 | 856.4 | 858.5 | 840.1 | 869.9 |
| 65° | 731.6 | 722.0 | 750.3 | 721.6 | 726.4 |
| 67.5° | 620.7 | 625.5 | 622.8 | 604.8 | 611.7 |
| 70° | 508.0 | 514.2 | 509.8 | 489.4 | 495.6 |
| 72.5° | 405.0 | 397.4 | 402.3 | 376.7 | 388.5 |
| 75° | 304.5 | 298.2 | 303.8 | 282.4 | 292.0 |
| 77.5° | 207.4 | 212.2 | 208.7 | 197.3 | 203.9 |
| 80° | 136.9 | 133.1 | 133.1 | 126.5 | 127.9 |
| 82.5° | 79.8 | 76.0 | 75.0 | 72.9 | 76.0 |
| 85° | 37.3 | 36.3 | 37.0 | 35.9 | 34.6 |
| 87.5° | 13.5 | 13.8 | 13.8 | 13.1 | 12.4 |
| 90° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

(END OF REPORT)