

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: P561724

Luminaire Tested: FSR-12-4-LD4-2STD-35-UNV-80-96-EDD-90

Issue Date: 7/20/2021

**Test Information**

Test Method: LM-79-2019  
Report Number: P561724  
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-12-4-LD4-2STD-35-UNV-80-96-EDD-90  
Description: 1X4 FSR TROFFER WITH .125 PRISMATIC ACRYLIC FIXTURE SIDE AND .250 CLEAR TEMPERED G ENVIRONMENTAL SIDE LENSES WITH, 90 CRI AND 3500K CCT LEDS  
Light Source: -  
Ballast/Driver: -

**Summary**

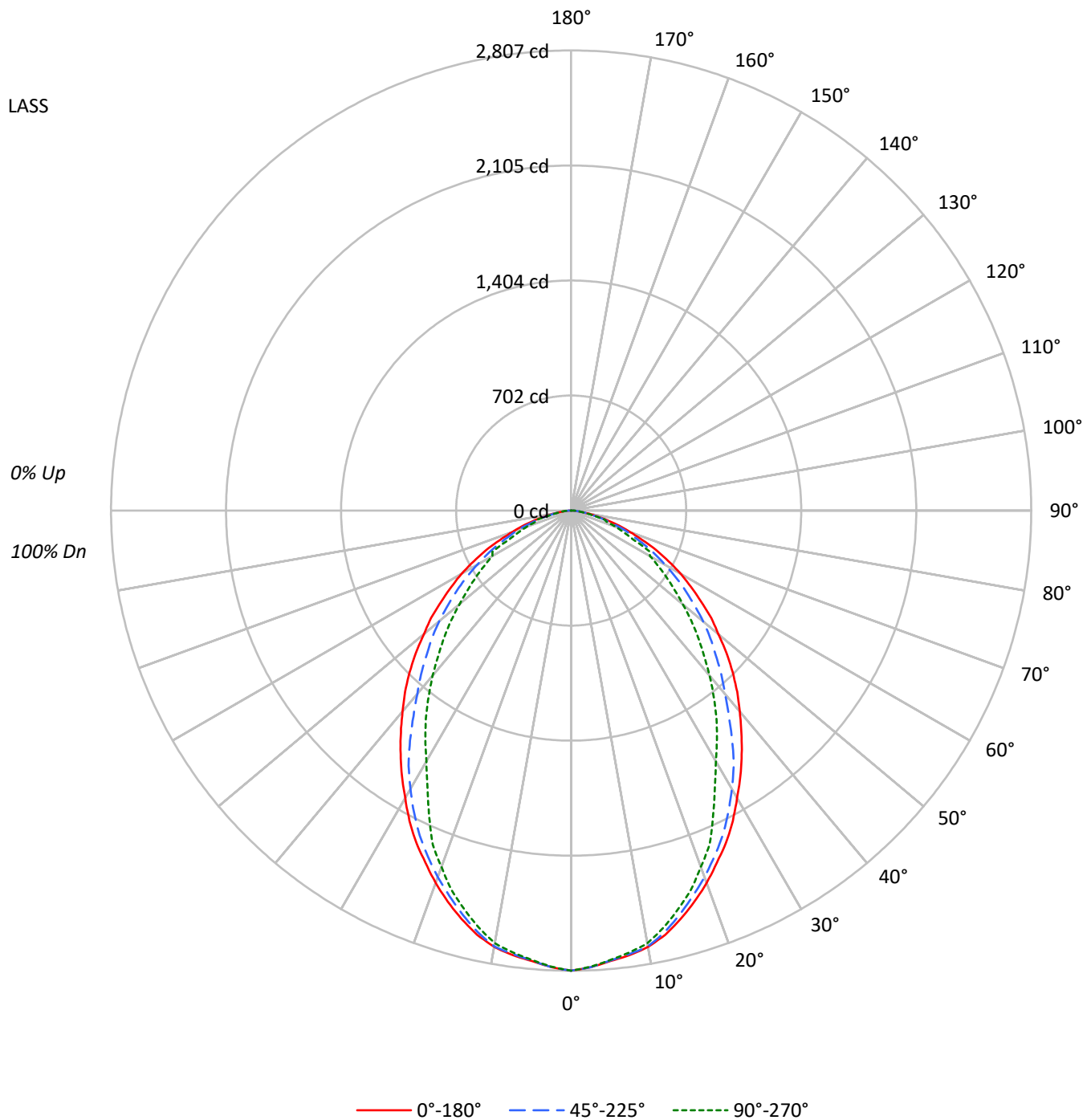
Lumens per Lamp: N/A  
Luminaire Lumens: 5510.0 lumens  
Efficiency: N/A  
Efficacy: 82.7 lumens/watt  
Spacing Criteria (0/90/45): 1.1 / 1 / 1.15  
Luminous Opening: Rectangular (W 1' x L: 4' x H: 0')  
CIE Type: Direct  
  
Input Watts (W): 66.6  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage 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





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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 |    |    |    |    |    |    |    |    | 100 |    |    |   |  |  |  |  |  |  |    |  |  |  |  |  |  |  |  |   |
| 1   | 110 | 106 | 102 | 99  | 108 | 104 | 100 | 97  | 100 | 97  | 94  | 96  | 94  | 91  | 92  | 90  | 89  | 87  |    |    |    |    |    |    |    |    | 87  |    |    |   |  |  |  |  |  |  |    |  |  |  |  |  |  |  |  |   |
| 2   | 101 | 94  | 88  | 83  | 99  | 92  | 87  | 82  | 89  | 84  | 80  | 86  | 82  | 78  | 83  | 79  | 77  | 75  |    |    |    |    |    |    |    |    | 75  |    |    |   |  |  |  |  |  |  |    |  |  |  |  |  |  |  |  |   |
| 3   | 93  | 84  | 77  | 71  | 91  | 82  | 76  | 70  | 79  | 74  | 69  | 77  | 72  | 68  | 74  | 70  | 67  | 65  |    |    |    |    |    |    |    |    | 65  |    |    |   |  |  |  |  |  |  |    |  |  |  |  |  |  |  |  |   |
| 4   | 86  | 75  | 67  | 61  | 84  | 74  | 66  | 61  | 72  | 65  | 60  | 69  | 64  | 59  | 67  | 62  | 58  | 56  |    |    |    |    |    |    |    |    | 56  |    |    |   |  |  |  |  |  |  |    |  |  |  |  |  |  |  |  |   |
| 5   | 80  | 68  | 60  | 54  | 78  | 67  | 59  | 53  | 65  | 58  | 53  | 63  | 57  | 52  | 61  | 56  | 52  | 50  |    |    |    |    |    |    |    |    | 50  |    |    |   |  |  |  |  |  |  |    |  |  |  |  |  |  |  |  |   |
| 6   | 74  | 62  | 53  | 48  | 72  | 61  | 53  | 47  | 59  | 52  | 47  | 57  | 51  | 47  | 56  | 50  | 46  | 44  |    |    |    |    |    |    |    |    | 44  |    |    |   |  |  |  |  |  |  |    |  |  |  |  |  |  |  |  |   |
| 7   | 69  | 56  | 48  | 43  | 67  | 56  | 48  | 42  | 54  | 47  | 42  | 53  | 46  | 42  | 51  | 46  | 42  | 40  |    |    |    |    |    |    |    |    | 40  |    |    |   |  |  |  |  |  |  |    |  |  |  |  |  |  |  |  |   |
| 8   | 65  | 52  | 44  | 38  | 63  | 51  | 44  | 38  | 50  | 43  | 38  | 49  | 42  | 38  | 48  | 42  | 38  | 36  |    |    |    |    |    |    |    |    | 36  |    |    |   |  |  |  |  |  |  |    |  |  |  |  |  |  |  |  |   |
| 9   | 61  | 48  | 40  | 35  | 59  | 47  | 40  | 35  | 46  | 39  | 35  | 45  | 39  | 34  | 44  | 38  | 34  | 33  |    |    |    |    |    |    |    |    | 33  |    |    |   |  |  |  |  |  |  |    |  |  |  |  |  |  |  |  |   |
| 10  | 57  | 44  | 37  | 32  | 56  | 44  | 37  | 32  | 43  | 36  | 32  | 42  | 36  | 32  | 41  | 36  | 32  | 30  |    |    |    |    |    |    |    |    | 30  |    |    |   |  |  |  |  |  |  |    |  |  |  |  |  |  |  |  |   |

**AVERAGE LUMINANCE (cd/sqm):**

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 7553 | 7553 | 7553 |
| 5°  | 7450 | 7441 | 7433 |
| 10° | 7386 | 7377 | 7324 |
| 15° | 7187 | 7114 | 7015 |
| 20° | 6922 | 6811 | 6625 |
| 25° | 6638 | 6494 | 6089 |
| 30° | 6291 | 6090 | 5485 |
| 35° | 5958 | 5628 | 5074 |
| 40° | 5619 | 5129 | 4616 |
| 45° | 5297 | 4742 | 4174 |
| 50° | 4904 | 4401 | 3722 |
| 55° | 4536 | 3988 | 3334 |
| 60° | 4156 | 3562 | 2986 |
| 65° | 3657 | 3120 | 2644 |
| 70° | 3013 | 2732 | 2246 |
| 75° | 2396 | 2092 | 2193 |
| 80° | 1609 | 1508 | 1409 |
| 85° | 1000 | 1201 | 1402 |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 5297 cd/sqm



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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 261.3  | 4.7       |
| 10°-20°   | 717.0  | 13.0      |
| 20°-30°   | 992.7  | 18.0      |
| 30°-40°   | 1058.5 | 19.2      |
| 40°-50°   | 965.6  | 17.5      |
| 50°-60°   | 756.5  | 13.7      |
| 60°-70°   | 493.1  | 8.9       |
| 70°-80°   | 218.4  | 4.0       |
| 80°-90°   | 46.9   | 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°    | 1971.0 | 35.8      |
| 0°-40°    | 3029.4 | 55.0      |
| 0°-60°    | 4751.6 | 86.2      |
| 0°-90°    | 5510.0 | 100.0     |
| 90°-120°  | 0.0    | 0.0       |
| 90°-150°  | 0.0    | 0.0       |
| 90°-180°  | 0.0    | 0.0       |
| 0°-180°   | 5510.0 | 100.0     |

**CANDELA DISTRIBUTION:**

|     | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|-----|------|-------|------|-------|------|------|
| 0°  | 2807 | 2807  | 2807 | 2807  | 2807 |      |
| 5°  | 2758 | 2755  | 2755 | 2752  | 2752 | 262  |
| 15° | 2580 | 2580  | 2554 | 2528  | 2518 | 725  |
| 25° | 2236 | 2223  | 2187 | 2109  | 2051 | 1026 |
| 35° | 1814 | 1801  | 1713 | 1583  | 1544 | 1134 |
| 45° | 1392 | 1363  | 1246 | 1142  | 1097 | 1072 |
| 55° | 967  | 938   | 850  | 750   | 711  | 867  |
| 65° | 574  | 542   | 490  | 500   | 415  | 566  |
| 75° | 230  | 214   | 201  | 191   | 211  | 247  |
| 85° | 32   | 36    | 39   | 42    | 45   | 45   |
| 90° | 0    | 0     | 0    | 0     | 0    |      |



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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|-------|--------|--------|--------|--------|--------|
| 0°    | 2806.7 | 2806.7 | 2806.7 | 2806.7 | 2806.7 |
| 2.5°  | 2787.3 | 2787.3 | 2787.3 | 2784.0 | 2784.0 |
| 5°    | 2758.0 | 2754.8 | 2754.8 | 2751.6 | 2751.6 |
| 7.5°  | 2735.3 | 2732.1 | 2728.8 | 2725.6 | 2719.1 |
| 10°   | 2702.9 | 2702.9 | 2699.6 | 2683.4 | 2680.2 |
| 12.5° | 2651.0 | 2647.7 | 2634.7 | 2612.0 | 2605.5 |
| 15°   | 2579.6 | 2579.6 | 2553.6 | 2527.7 | 2517.9 |
| 17.5° | 2501.7 | 2498.5 | 2466.0 | 2440.1 | 2427.1 |
| 20°   | 2417.3 | 2410.9 | 2378.4 | 2336.2 | 2313.5 |
| 22.5° | 2323.3 | 2323.3 | 2284.3 | 2229.2 | 2206.4 |
| 25°   | 2235.6 | 2222.7 | 2187.0 | 2109.1 | 2050.7 |
| 27.5° | 2135.1 | 2115.6 | 2076.6 | 1966.3 | 1898.2 |
| 30°   | 2024.7 | 2015.0 | 1959.8 | 1817.1 | 1765.2 |
| 32.5° | 1920.9 | 1904.7 | 1846.3 | 1697.0 | 1654.8 |
| 35°   | 1813.8 | 1800.8 | 1713.2 | 1583.4 | 1544.5 |
| 37.5° | 1706.7 | 1690.5 | 1580.2 | 1476.4 | 1427.7 |
| 40°   | 1599.7 | 1580.2 | 1460.1 | 1366.0 | 1314.1 |
| 42.5° | 1499.1 | 1473.1 | 1356.3 | 1255.7 | 1197.3 |
| 45°   | 1392.0 | 1362.8 | 1246.0 | 1142.2 | 1096.7 |
| 47.5° | 1284.9 | 1259.0 | 1151.9 | 1044.8 | 992.9  |
| 50°   | 1171.4 | 1148.6 | 1051.3 | 944.2  | 889.1  |
| 52.5° | 1077.3 | 1041.6 | 947.5  | 840.4  | 795.0  |
| 55°   | 966.9  | 937.7  | 850.1  | 749.5  | 710.6  |
| 57.5° | 866.4  | 837.1  | 756.0  | 661.9  | 629.5  |
| 60°   | 772.3  | 730.1  | 661.9  | 580.8  | 554.9  |
| 62.5° | 668.4  | 636.0  | 577.6  | 509.4  | 541.9  |
| 65°   | 574.3  | 541.9  | 490.0  | 499.7  | 415.3  |
| 67.5° | 470.5  | 454.3  | 408.8  | 363.4  | 350.4  |
| 70°   | 382.9  | 363.4  | 347.2  | 298.5  | 285.5  |
| 72.5° | 305.0  | 285.5  | 262.8  | 236.9  | 227.1  |
| 75°   | 230.4  | 214.2  | 201.2  | 191.4  | 210.9  |
| 77.5° | 159.0  | 152.5  | 142.8  | 133.0  | 129.8  |
| 80°   | 103.8  | 100.6  | 97.3   | 94.1   | 90.9   |
| 82.5° | 61.7   | 61.7   | 61.7   | 61.7   | 61.7   |
| 85°   | 32.4   | 35.7   | 38.9   | 42.2   | 45.4   |
| 87.5° | 19.5   | 19.5   | 22.7   | 26.0   | 29.2   |
| 90°   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |

(END OF REPORT)