

Scaled data based on original data using  
LM-79-08 Approved Method: Electrical and Photometric Measurements of Solid-State  
Lighting Products

Test Report Prepared for

Cooper Lighting Solutions

(formerly Eaton)

Brand: FAIL-SAFE

Report Number: P589557

Luminaire Tested: **FMR-24-2-LD4-4HI-35-UNV-80-84-EDD**

Issue Date: 12/8/2021



**Test Information**

Test Method: LM-79-08  
Report Number: P589557  
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 (FORMERLY EATON)  
Product Line: FAIL-SAFE  
Catalog Number: FMR-24-2-LD4-4HI-35-UNV-80-84-EDD  
Description: 2X2 FMR TROFFER WITH .125 PRISMATIC ACRYLIC FIXTURE SIDE AND .125 CLEAR PC ENVIRONMENTAL SIDE LENSES WITH, 80 CRI AND 3500K CCT LEDS  
Light Source: -  
Ballast/Driver: -

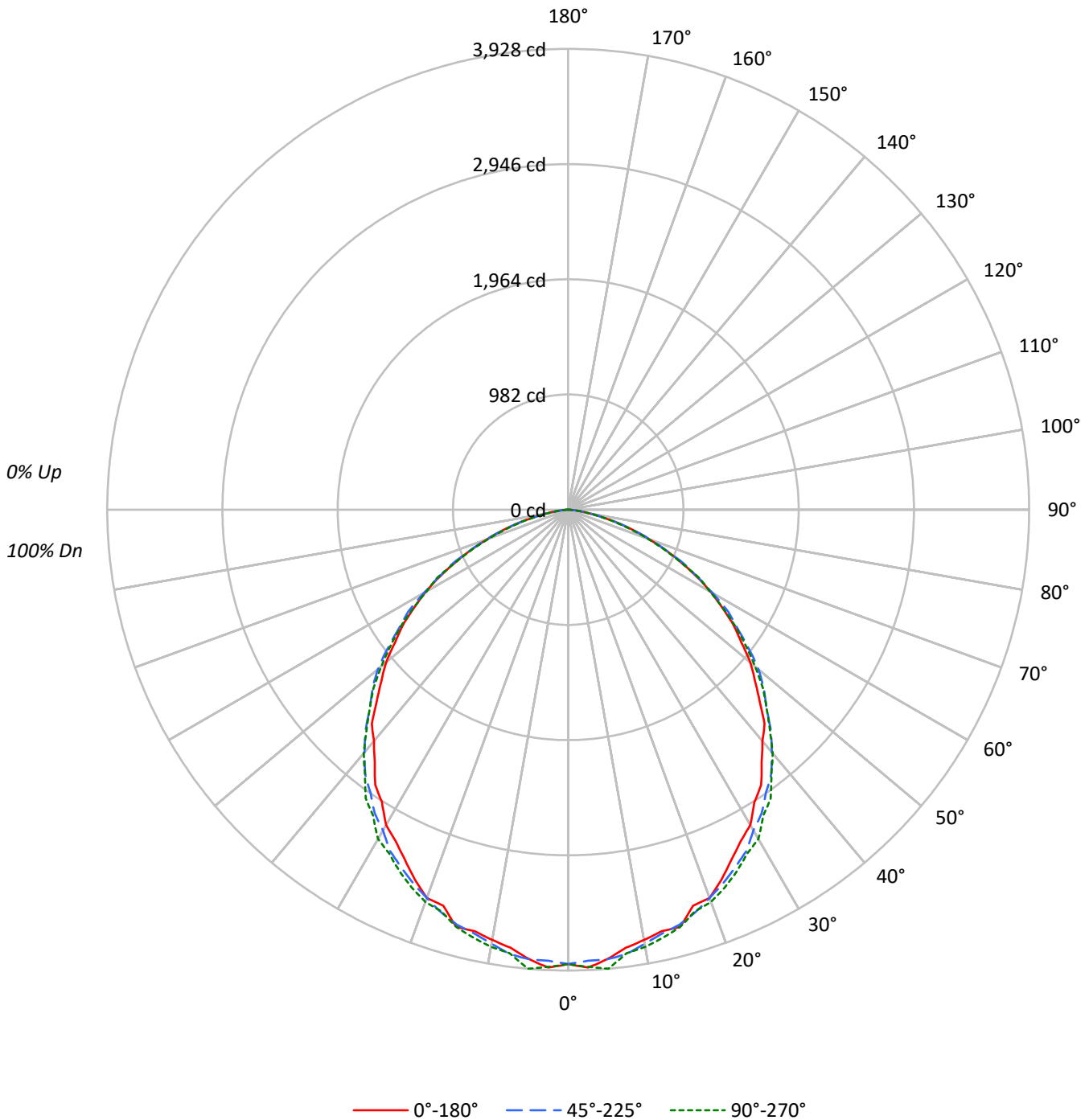
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 9759.9 lumens  
Efficiency: N/A  
Efficacy: 113.0 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): NR  
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: 25 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  | 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  |    |    |    |    | 86  |   |  |   |
| 2   | 100 | 93  | 86  | 81  | 98  | 91  | 85  | 80  | 87  | 82  | 78  | 84  | 80  | 76  | 81  | 78  | 75  | 73  |    |    |    |    | 73  |   |  |   |
| 3   | 92  | 82  | 74  | 68  | 89  | 80  | 73  | 67  | 77  | 71  | 66  | 75  | 69  | 65  | 72  | 68  | 64  | 62  |    |    |    |    | 62  |   |  |   |
| 4   | 84  | 73  | 64  | 58  | 82  | 71  | 64  | 58  | 69  | 62  | 57  | 67  | 61  | 56  | 65  | 59  | 55  | 53  |    |    |    |    | 53  |   |  |   |
| 5   | 78  | 65  | 57  | 50  | 76  | 64  | 56  | 50  | 62  | 55  | 49  | 60  | 54  | 49  | 58  | 53  | 48  | 46  |    |    |    |    | 46  |   |  |   |
| 6   | 72  | 59  | 50  | 44  | 70  | 58  | 50  | 44  | 56  | 49  | 43  | 54  | 48  | 43  | 53  | 47  | 43  | 41  |    |    |    |    | 41  |   |  |   |
| 7   | 67  | 53  | 45  | 39  | 65  | 53  | 45  | 39  | 51  | 44  | 39  | 50  | 43  | 38  | 48  | 42  | 38  | 36  |    |    |    |    | 36  |   |  |   |
| 8   | 62  | 49  | 41  | 35  | 61  | 48  | 40  | 35  | 47  | 40  | 34  | 46  | 39  | 34  | 44  | 39  | 34  | 32  |    |    |    |    | 32  |   |  |   |
| 9   | 58  | 45  | 37  | 31  | 57  | 44  | 37  | 31  | 43  | 36  | 31  | 42  | 36  | 31  | 41  | 35  | 31  | 29  |    |    |    |    | 29  |   |  |   |
| 10  | 54  | 41  | 34  | 29  | 53  | 41  | 33  | 28  | 40  | 33  | 28  | 39  | 33  | 28  | 38  | 32  | 28  | 26  |    |    |    |    | 26  |   |  |   |

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

|     | 0°    | 45°   | 90°   |
|-----|-------|-------|-------|
| 0°  | 10421 | 10421 | 10421 |
| 5°  | 10386 | 10390 | 10609 |
| 10° | 10176 | 10265 | 10337 |
| 15° | 10256 | 10201 | 10258 |
| 20° | 10083 | 10083 | 10190 |
| 25° | 9773  | 9987  | 10097 |
| 30° | 9639  | 9808  | 10069 |
| 35° | 9412  | 9658  | 9875  |
| 40° | 9046  | 9481  | 9523  |
| 45° | 8772  | 9084  | 9097  |
| 50° | 8484  | 8867  | 8697  |
| 55° | 8084  | 8241  | 8182  |
| 60° | 7559  | 7634  | 7497  |
| 65° | 6740  | 6912  | 6692  |
| 70° | 5783  | 5803  | 5641  |
| 75° | 4580  | 4570  | 4393  |
| 80° | 3068  | 2983  | 2867  |
| 85° | 1667  | 1652  | 1544  |



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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 364.3  | 3.7       |
| 10°-20°   | 1032.4 | 10.6      |
| 20°-30°   | 1546.7 | 15.8      |
| 30°-40°   | 1833.2 | 18.8      |
| 40°-50°   | 1836.6 | 18.8      |
| 50°-60°   | 1558.9 | 16.0      |
| 60°-70°   | 1051.0 | 10.8      |
| 70°-80°   | 461.8  | 4.7       |
| 80°-90°   | 75.0   | 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°    | 2943.4 | 30.2      |
| 0°-40°    | 4776.5 | 48.9      |
| 0°-60°    | 8172.0 | 83.7      |
| 0°-90°    | 9759.9 | 100.0     |
| 90°-120°  | 0.0    | 0.0       |
| 90°-150°  | 0.0    | 0.0       |
| 90°-180°  | 0.0    | 0.0       |
| 0°-180°   | 9759.9 | 100.0     |

**CANDELA DISTRIBUTION:**

|     | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|-----|------|-------|------|-------|------|------|
| 0°  | 3872 | 3872  | 3872 | 3872  | 3872 |      |
| 5°  | 3845 | 3836  | 3846 | 3835  | 3928 | 362  |
| 15° | 3682 | 3639  | 3662 | 3680  | 3682 | 1026 |
| 25° | 3292 | 3310  | 3364 | 3408  | 3400 | 1522 |
| 35° | 2865 | 2874  | 2940 | 3008  | 3006 | 1779 |
| 45° | 2305 | 2348  | 2387 | 2448  | 2390 | 1783 |
| 55° | 1723 | 1712  | 1756 | 1744  | 1744 | 1533 |
| 65° | 1058 | 1044  | 1086 | 1044  | 1051 | 1053 |
| 75° | 440  | 432   | 440  | 408   | 422  | 472  |
| 85° | 54   | 52    | 54   | 52    | 50   | 78   |
| 90° | 0    | 0     | 0    | 0     | 0    |      |



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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|-------|--------|--------|--------|--------|--------|
| 0°    | 3872.5 | 3872.5 | 3872.5 | 3872.5 | 3872.5 |
| 2.5°  | 3906.0 | 3876.5 | 3849.0 | 3881.0 | 3900.5 |
| 5°    | 3845.0 | 3836.0 | 3846.5 | 3835.0 | 3927.5 |
| 7.5°  | 3766.0 | 3800.5 | 3820.5 | 3808.0 | 3813.5 |
| 10°   | 3724.0 | 3712.0 | 3756.5 | 3787.5 | 3783.0 |
| 12.5° | 3679.0 | 3697.0 | 3699.5 | 3733.0 | 3736.0 |
| 15°   | 3681.5 | 3639.0 | 3661.5 | 3680.5 | 3682.0 |
| 17.5° | 3538.5 | 3584.5 | 3600.0 | 3643.5 | 3589.5 |
| 20°   | 3521.0 | 3487.5 | 3521.0 | 3565.5 | 3558.5 |
| 22.5° | 3413.5 | 3376.0 | 3448.0 | 3487.5 | 3485.0 |
| 25°   | 3291.5 | 3309.5 | 3363.5 | 3407.5 | 3400.5 |
| 27.5° | 3184.5 | 3205.5 | 3282.5 | 3343.0 | 3304.0 |
| 30°   | 3102.0 | 3091.5 | 3156.5 | 3210.5 | 3240.5 |
| 32.5° | 2954.5 | 2992.5 | 3068.5 | 3122.0 | 3093.5 |
| 35°   | 2865.0 | 2873.5 | 2940.0 | 3008.0 | 3006.0 |
| 37.5° | 2708.5 | 2748.0 | 2841.5 | 2860.5 | 2843.0 |
| 40°   | 2575.0 | 2614.5 | 2699.0 | 2719.5 | 2711.0 |
| 42.5° | 2476.5 | 2483.5 | 2556.0 | 2579.5 | 2542.0 |
| 45°   | 2305.0 | 2348.0 | 2387.0 | 2448.5 | 2390.5 |
| 47.5° | 2159.0 | 2179.0 | 2263.0 | 2279.5 | 2249.0 |
| 50°   | 2026.5 | 2033.5 | 2118.0 | 2097.5 | 2077.5 |
| 52.5° | 1860.0 | 1889.5 | 1937.0 | 1933.0 | 1909.5 |
| 55°   | 1723.0 | 1711.5 | 1756.5 | 1744.5 | 1744.0 |
| 57.5° | 1558.5 | 1578.5 | 1615.5 | 1596.5 | 1566.0 |
| 60°   | 1404.5 | 1405.0 | 1418.5 | 1397.0 | 1393.0 |
| 62.5° | 1233.0 | 1239.0 | 1242.0 | 1215.5 | 1258.5 |
| 65°   | 1058.5 | 1044.5 | 1085.5 | 1044.0 | 1051.0 |
| 67.5° | 898.0  | 905.0  | 901.0  | 875.0  | 885.0  |
| 70°   | 735.0  | 744.0  | 737.5  | 708.0  | 717.0  |
| 72.5° | 586.0  | 575.0  | 582.0  | 545.0  | 562.0  |
| 75°   | 440.5  | 431.5  | 439.5  | 408.5  | 422.5  |
| 77.5° | 300.0  | 307.0  | 302.0  | 285.5  | 295.0  |
| 80°   | 198.0  | 192.5  | 192.5  | 183.0  | 185.0  |
| 82.5° | 115.5  | 110.0  | 108.5  | 105.5  | 110.0  |
| 85°   | 54.0   | 52.5   | 53.5   | 52.0   | 50.0   |
| 87.5° | 19.5   | 20.0   | 20.0   | 19.0   | 18.0   |
| 90°   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |

(END OF REPORT)