

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: P589599

Luminaire Tested: **FMR-24-2-LD4-4HI-40-UNV-81-86-EDD**

Issue Date: 12/8/2021



**Test Information**

Test Method: LM-79-08  
Report Number: P589599  
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-40-UNV-81-86-EDD  
Description: 2X2 FMR TROFFER WITH .156 CLEAR PC FIXTURE SIDE AND .250 CLEAR PC ENVIRONMENTAL SIDE LENSES WITH, 80 CRI AND 4000K CCT LEDS  
Light Source: -  
Ballast/Driver: -

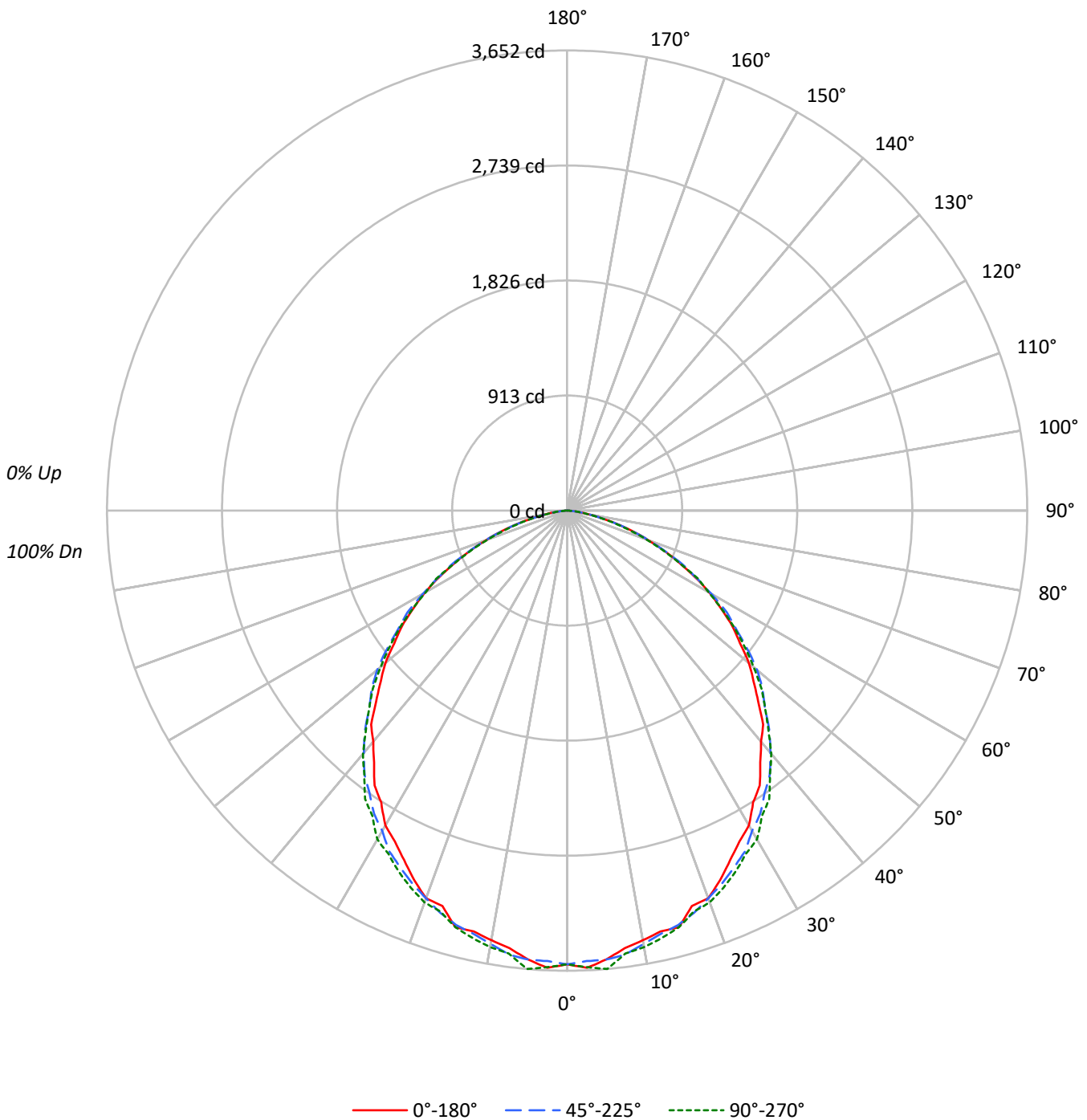
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 9075.0 lumens  
Efficiency: N/A  
Efficacy: 105.0 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

TEST NUMBER: P589599

CATALOG NUMBER: FMR-24-2-LD4-4HI-40-UNV-81-86-EDD

### Luminous Intensity Polar Plot





TEST NUMBER: P589599

CATALOG NUMBER: FMR-24-2-LD4-4HI-40-UNV-81-86-EDD

**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 | 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°  | 9689 | 9689 | 9689 |
| 5°  | 9658 | 9661 | 9865 |
| 10° | 9462 | 9544 | 9612 |
| 15° | 9536 | 9485 | 9538 |
| 20° | 9375 | 9375 | 9475 |
| 25° | 9087 | 9286 | 9388 |
| 30° | 8962 | 9120 | 9363 |
| 35° | 8751 | 8980 | 9182 |
| 40° | 8411 | 8816 | 8855 |
| 45° | 8156 | 8447 | 8459 |
| 50° | 7888 | 8245 | 8087 |
| 55° | 7516 | 7662 | 7608 |
| 60° | 7028 | 7099 | 6971 |
| 65° | 6267 | 6427 | 6222 |
| 70° | 5377 | 5395 | 5246 |
| 75° | 4259 | 4249 | 4084 |
| 80° | 2853 | 2774 | 2665 |
| 85° | 1550 | 1535 | 1436 |



TEST NUMBER: P589599

CATALOG NUMBER: FMR-24-2-LD4-4HI-40-UNV-81-86-EDD

**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 338.7  | 3.7       |
| 10°-20°   | 959.9  | 10.6      |
| 20°-30°   | 1438.2 | 15.8      |
| 30°-40°   | 1704.5 | 18.8      |
| 40°-50°   | 1707.7 | 18.8      |
| 50°-60°   | 1449.5 | 16.0      |
| 60°-70°   | 977.3  | 10.8      |
| 70°-80°   | 429.4  | 4.7       |
| 80°-90°   | 69.8   | 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°    | 2736.8 | 30.2      |
| 0°-40°    | 4441.3 | 48.9      |
| 0°-60°    | 7598.5 | 83.7      |
| 0°-90°    | 9075.0 | 100.0     |
| 90°-120°  | 0.0    | 0.0       |
| 90°-150°  | 0.0    | 0.0       |
| 90°-180°  | 0.0    | 0.0       |
| 0°-180°   | 9075.0 | 100.0     |

**CANDELA DISTRIBUTION:**

|     | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|-----|------|-------|------|-------|------|------|
| 0°  | 3601 | 3601  | 3601 | 3601  | 3601 |      |
| 5°  | 3575 | 3567  | 3577 | 3566  | 3652 | 337  |
| 15° | 3423 | 3384  | 3404 | 3422  | 3424 | 954  |
| 25° | 3060 | 3077  | 3128 | 3168  | 3162 | 1415 |
| 35° | 2664 | 2672  | 2734 | 2797  | 2795 | 1654 |
| 45° | 2143 | 2183  | 2220 | 2277  | 2223 | 1658 |
| 55° | 1602 | 1591  | 1633 | 1622  | 1622 | 1425 |
| 65° | 984  | 971   | 1009 | 971   | 977  | 979  |
| 75° | 410  | 401   | 409  | 380   | 393  | 439  |
| 85° | 50   | 49    | 50   | 48    | 46   | 73   |
| 90° | 0    | 0     | 0    | 0     | 0    |      |



TEST NUMBER: P589599

CATALOG NUMBER: FMR-24-2-LD4-4HI-40-UNV-81-86-EDD

**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|-------|--------|--------|--------|--------|--------|
| 0°    | 3600.7 | 3600.7 | 3600.7 | 3600.7 | 3600.7 |
| 2.5°  | 3631.9 | 3604.5 | 3578.9 | 3608.6 | 3626.8 |
| 5°    | 3575.2 | 3566.8 | 3576.6 | 3565.9 | 3651.9 |
| 7.5°  | 3501.7 | 3533.8 | 3552.4 | 3540.8 | 3545.9 |
| 10°   | 3462.7 | 3451.5 | 3492.9 | 3521.7 | 3517.5 |
| 12.5° | 3420.8 | 3437.5 | 3439.9 | 3471.0 | 3473.8 |
| 15°   | 3423.1 | 3383.6 | 3404.5 | 3422.2 | 3423.6 |
| 17.5° | 3290.2 | 3332.9 | 3347.4 | 3387.8 | 3337.6 |
| 20°   | 3273.9 | 3242.7 | 3273.9 | 3315.3 | 3308.8 |
| 22.5° | 3173.9 | 3139.1 | 3206.0 | 3242.7 | 3240.4 |
| 25°   | 3060.5 | 3077.2 | 3127.5 | 3168.4 | 3161.9 |
| 27.5° | 2961.0 | 2980.5 | 3052.1 | 3108.4 | 3072.1 |
| 30°   | 2884.3 | 2874.5 | 2935.0 | 2985.2 | 3013.1 |
| 32.5° | 2747.2 | 2782.5 | 2853.2 | 2902.9 | 2876.4 |
| 35°   | 2663.9 | 2671.8 | 2733.7 | 2796.9 | 2795.0 |
| 37.5° | 2518.4 | 2555.1 | 2642.1 | 2659.8 | 2643.5 |
| 40°   | 2394.3 | 2431.0 | 2509.6 | 2528.6 | 2520.7 |
| 42.5° | 2302.7 | 2309.2 | 2376.6 | 2398.5 | 2363.6 |
| 45°   | 2143.2 | 2183.2 | 2219.5 | 2276.7 | 2222.7 |
| 47.5° | 2007.5 | 2026.1 | 2104.2 | 2119.5 | 2091.2 |
| 50°   | 1884.3 | 1890.8 | 1969.4 | 1950.3 | 1931.7 |
| 52.5° | 1729.5 | 1756.9 | 1801.1 | 1797.3 | 1775.5 |
| 55°   | 1602.1 | 1591.4 | 1633.2 | 1622.1 | 1621.6 |
| 57.5° | 1449.1 | 1467.7 | 1502.1 | 1484.5 | 1456.1 |
| 60°   | 1305.9 | 1306.4 | 1319.0 | 1299.0 | 1295.2 |
| 62.5° | 1146.5 | 1152.0 | 1154.8 | 1130.2 | 1170.2 |
| 65°   | 984.2  | 971.2  | 1009.3 | 970.7  | 977.2  |
| 67.5° | 835.0  | 841.5  | 837.8  | 813.6  | 822.9  |
| 70°   | 683.4  | 691.8  | 685.7  | 658.3  | 666.7  |
| 72.5° | 544.9  | 534.6  | 541.2  | 506.8  | 522.6  |
| 75°   | 409.6  | 401.2  | 408.7  | 379.8  | 392.8  |
| 77.5° | 278.9  | 285.5  | 280.8  | 265.5  | 274.3  |
| 80°   | 184.1  | 179.0  | 179.0  | 170.2  | 172.0  |
| 82.5° | 107.4  | 102.3  | 100.9  | 98.1   | 102.3  |
| 85°   | 50.2   | 48.8   | 49.7   | 48.4   | 46.5   |
| 87.5° | 18.1   | 18.6   | 18.6   | 17.7   | 16.7   |
| 90°   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |

(END OF REPORT)