

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: P589326

Luminaire Tested: **FMR-24-2-LD4-3HI-40-UNV-93-85-EDD**

Issue Date: 12/8/2021



**Test Information**

Test Method: LM-79-08  
Report Number: P589326  
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-LD4-3HI-40-UNV-93-85-EDD  
Description: 2X2 FMR TROFFER WITH .156 CLEAR TEMPERED GLASS FIXTURE SIDE AND .187 CLEAR PC ENVIRONMENTAL SIDE LENSES WITH, 80 CRI AND 4000K CCT LEDS  
Light Source: -  
Ballast/Driver: -

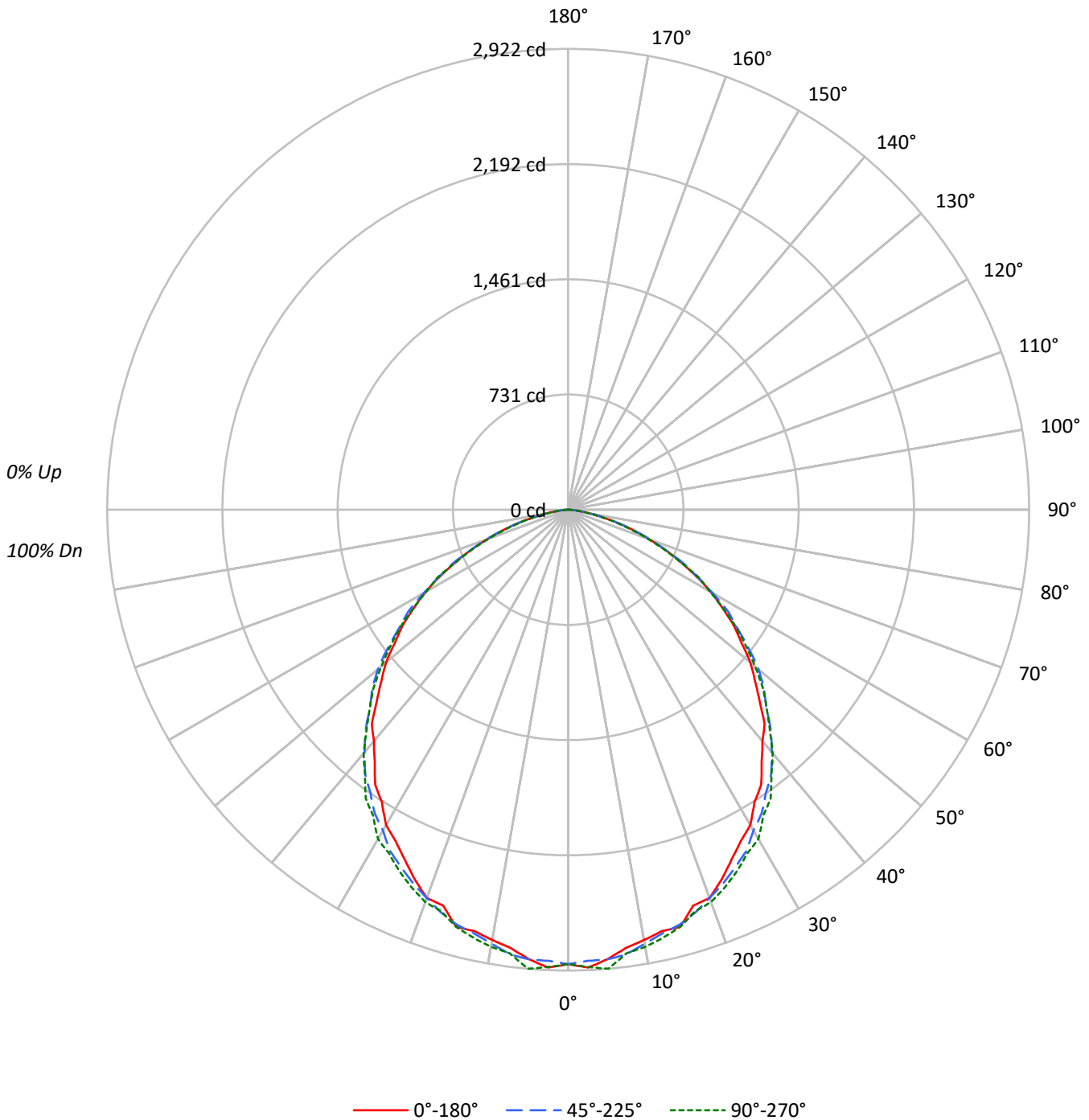
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 7261.0 lumens  
Efficiency: N/A  
Efficacy: 112.1 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): 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  | 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°  | 7753 | 7753 | 7753 |
| 5°  | 7727 | 7730 | 7893 |
| 10° | 7570 | 7636 | 7690 |
| 15° | 7630 | 7589 | 7631 |
| 20° | 7501 | 7501 | 7581 |
| 25° | 7271 | 7430 | 7511 |
| 30° | 7171 | 7297 | 7491 |
| 35° | 7002 | 7185 | 7346 |
| 40° | 6730 | 7053 | 7085 |
| 45° | 6526 | 6758 | 6768 |
| 50° | 6311 | 6597 | 6471 |
| 55° | 6014 | 6131 | 6087 |
| 60° | 5624 | 5680 | 5577 |
| 65° | 5014 | 5142 | 4979 |
| 70° | 4302 | 4317 | 4197 |
| 75° | 3407 | 3400 | 3268 |
| 80° | 2283 | 2219 | 2132 |
| 85° | 1241 | 1229 | 1149 |



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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 271.0  | 3.7       |
| 10°-20°   | 768.0  | 10.6      |
| 20°-30°   | 1150.7 | 15.8      |
| 30°-40°   | 1363.8 | 18.8      |
| 40°-50°   | 1366.3 | 18.8      |
| 50°-60°   | 1159.8 | 16.0      |
| 60°-70°   | 781.9  | 10.8      |
| 70°-80°   | 343.6  | 4.7       |
| 80°-90°   | 55.8   | 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°    | 2189.7 | 30.2      |
| 0°-40°    | 3553.5 | 48.9      |
| 0°-60°    | 6079.6 | 83.7      |
| 0°-90°    | 7261.0 | 100.0     |
| 90°-120°  | 0.0    | 0.0       |
| 90°-150°  | 0.0    | 0.0       |
| 90°-180°  | 0.0    | 0.0       |
| 0°-180°   | 7261.0 | 100.0     |

**CANDELA DISTRIBUTION:**

|     | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|-----|------|-------|------|-------|------|------|
| 0°  | 2881 | 2881  | 2881 | 2881  | 2881 |      |
| 5°  | 2860 | 2854  | 2862 | 2853  | 2922 | 270  |
| 15° | 2739 | 2707  | 2724 | 2738  | 2739 | 763  |
| 25° | 2449 | 2462  | 2502 | 2535  | 2530 | 1132 |
| 35° | 2131 | 2138  | 2187 | 2238  | 2236 | 1323 |
| 45° | 1715 | 1747  | 1776 | 1822  | 1778 | 1327 |
| 55° | 1282 | 1273  | 1307 | 1298  | 1298 | 1140 |
| 65° | 788  | 777   | 808  | 777   | 782  | 783  |
| 75° | 328  | 321   | 327  | 304   | 314  | 351  |
| 85° | 40   | 39    | 40   | 39    | 37   | 58   |
| 90° | 0    | 0     | 0    | 0     | 0    |      |



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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|-------|--------|--------|--------|--------|--------|
| 0°    | 2881.0 | 2881.0 | 2881.0 | 2881.0 | 2881.0 |
| 2.5°  | 2905.9 | 2884.0 | 2863.5 | 2887.3 | 2901.8 |
| 5°    | 2860.5 | 2853.8 | 2861.6 | 2853.1 | 2921.9 |
| 7.5°  | 2801.7 | 2827.4 | 2842.3 | 2833.0 | 2837.1 |
| 10°   | 2770.5 | 2761.6 | 2794.7 | 2817.7 | 2814.4 |
| 12.5° | 2737.0 | 2750.4 | 2752.3 | 2777.2 | 2779.4 |
| 15°   | 2738.9 | 2707.3 | 2724.0 | 2738.1 | 2739.3 |
| 17.5° | 2632.5 | 2666.7 | 2678.3 | 2710.6 | 2670.4 |
| 20°   | 2619.5 | 2594.6 | 2619.5 | 2652.6 | 2647.4 |
| 22.5° | 2539.5 | 2511.6 | 2565.2 | 2594.6 | 2592.7 |
| 25°   | 2448.7 | 2462.1 | 2502.3 | 2535.0 | 2529.8 |
| 27.5° | 2369.1 | 2384.8 | 2442.0 | 2487.1 | 2458.0 |
| 30°   | 2307.8 | 2299.9 | 2348.3 | 2388.5 | 2410.8 |
| 32.5° | 2198.0 | 2226.3 | 2282.8 | 2322.6 | 2301.4 |
| 35°   | 2131.4 | 2137.8 | 2187.2 | 2237.8 | 2236.3 |
| 37.5° | 2015.0 | 2044.4 | 2114.0 | 2128.1 | 2115.1 |
| 40°   | 1915.7 | 1945.1 | 2007.9 | 2023.2 | 2016.9 |
| 42.5° | 1842.4 | 1847.6 | 1901.6 | 1919.0 | 1891.1 |
| 45°   | 1714.8 | 1746.8 | 1775.8 | 1821.6 | 1778.4 |
| 47.5° | 1606.2 | 1621.1 | 1683.6 | 1695.9 | 1673.2 |
| 50°   | 1507.6 | 1512.8 | 1575.7 | 1560.5 | 1545.6 |
| 52.5° | 1383.8 | 1405.7 | 1441.0 | 1438.1 | 1420.6 |
| 55°   | 1281.8 | 1273.3 | 1306.8 | 1297.8 | 1297.5 |
| 57.5° | 1159.5 | 1174.3 | 1201.9 | 1187.7 | 1165.0 |
| 60°   | 1044.9 | 1045.3 | 1055.3 | 1039.3 | 1036.3 |
| 62.5° | 917.3  | 921.8  | 924.0  | 904.3  | 936.3  |
| 65°   | 787.5  | 777.1  | 807.6  | 776.7  | 781.9  |
| 67.5° | 668.1  | 673.3  | 670.3  | 651.0  | 658.4  |
| 70°   | 546.8  | 553.5  | 548.7  | 526.7  | 533.4  |
| 72.5° | 436.0  | 427.8  | 433.0  | 405.5  | 418.1  |
| 75°   | 327.7  | 321.0  | 327.0  | 303.9  | 314.3  |
| 77.5° | 223.2  | 228.4  | 224.7  | 212.4  | 219.5  |
| 80°   | 147.3  | 143.2  | 143.2  | 136.1  | 137.6  |
| 82.5° | 85.9   | 81.8   | 80.7   | 78.5   | 81.8   |
| 85°   | 40.2   | 39.1   | 39.8   | 38.7   | 37.2   |
| 87.5° | 14.5   | 14.9   | 14.9   | 14.1   | 13.4   |
| 90°   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |

(END OF REPORT)