

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: P589348

Luminaire Tested: **FMR-24-2-LD4-3HI-50-UNV-81-97-EDD**

Issue Date: 12/8/2021



**Test Information**

Test Method: LM-79-08  
Report Number: P589348  
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-50-UNV-81-97-EDD  
Description: 2X2 FMR TROFFER WITH .156 CLEAR PC FIXTURE SIDE AND .375 CLEAR  
TEMPERED GLASS ENVIRONMENTAL SIDE LENSES WITH, 80 CRI AND 5000K CCT LEDS  
Light Source: -  
Ballast/Driver: -

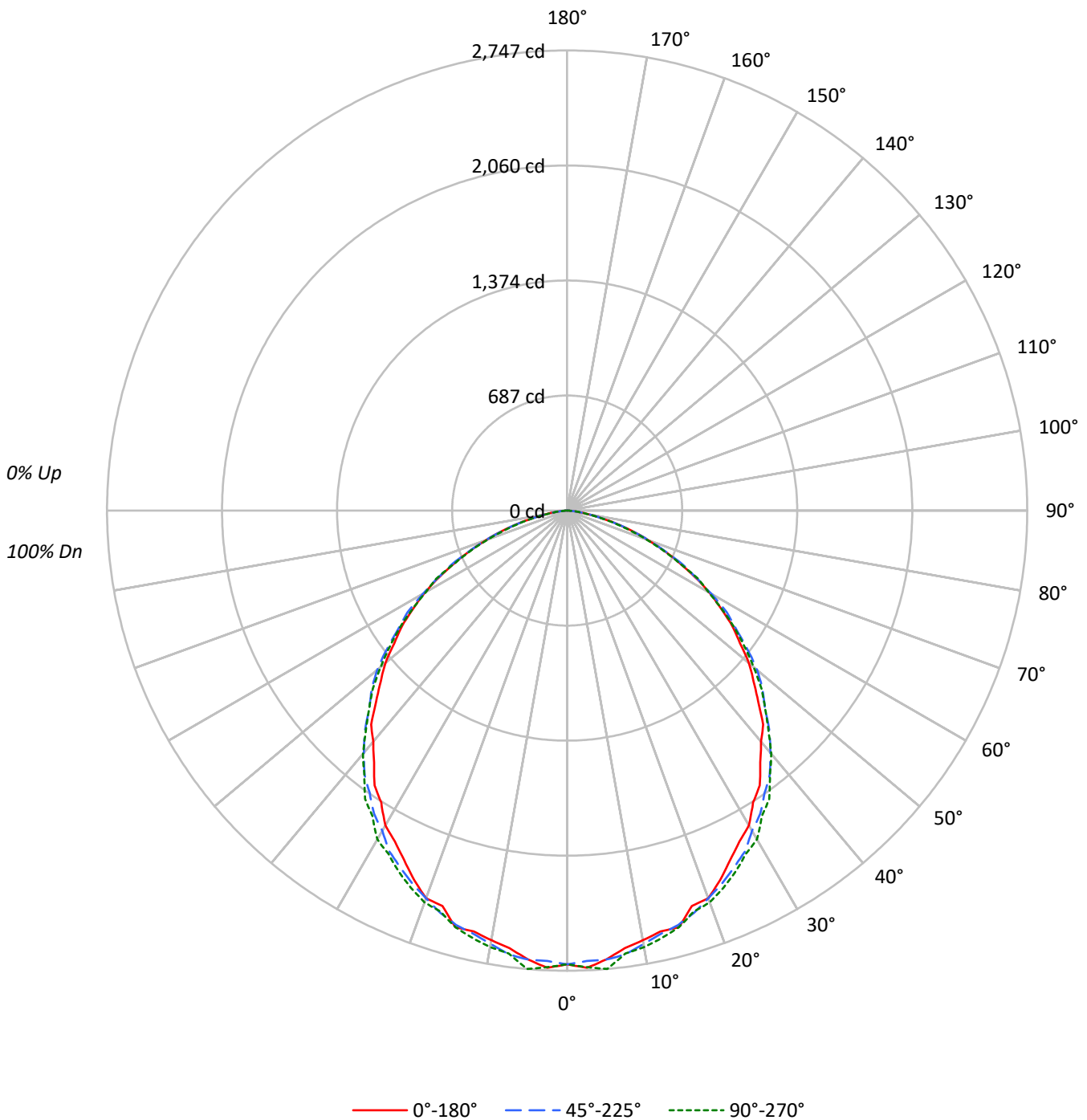
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 6826.0 lumens  
Efficiency: N/A  
Efficacy: 105.3 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  | 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°  | 7288 | 7288 | 7288 |
| 5°  | 7264 | 7267 | 7420 |
| 10° | 7117 | 7179 | 7230 |
| 15° | 7173 | 7134 | 7174 |
| 20° | 7052 | 7052 | 7127 |
| 25° | 6835 | 6985 | 7062 |
| 30° | 6741 | 6860 | 7042 |
| 35° | 6582 | 6755 | 6907 |
| 40° | 6326 | 6631 | 6660 |
| 45° | 6135 | 6353 | 6363 |
| 50° | 5933 | 6201 | 6083 |
| 55° | 5653 | 5764 | 5722 |
| 60° | 5287 | 5339 | 5243 |
| 65° | 4714 | 4834 | 4681 |
| 70° | 4045 | 4058 | 3946 |
| 75° | 3203 | 3196 | 3072 |
| 80° | 2146 | 2086 | 2005 |
| 85° | 1167 | 1155 | 1081 |



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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 254.8  | 3.7       |
| 10°-20°   | 722.0  | 10.6      |
| 20°-30°   | 1081.8 | 15.8      |
| 30°-40°   | 1282.1 | 18.8      |
| 40°-50°   | 1284.5 | 18.8      |
| 50°-60°   | 1090.3 | 16.0      |
| 60°-70°   | 735.1  | 10.8      |
| 70°-80°   | 323.0  | 4.7       |
| 80°-90°   | 52.5   | 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°    | 2058.6 | 30.2      |
| 0°-40°    | 3340.7 | 48.9      |
| 0°-60°    | 5715.4 | 83.7      |
| 0°-90°    | 6826.0 | 100.0     |
| 90°-120°  | 0.0    | 0.0       |
| 90°-150°  | 0.0    | 0.0       |
| 90°-180°  | 0.0    | 0.0       |
| 0°-180°   | 6826.0 | 100.0     |

**CANDELA DISTRIBUTION:**

|     | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|-----|------|-------|------|-------|------|------|
| 0°  | 2708 | 2708  | 2708 | 2708  | 2708 |      |
| 5°  | 2689 | 2683  | 2690 | 2682  | 2747 | 254  |
| 15° | 2575 | 2545  | 2561 | 2574  | 2575 | 717  |
| 25° | 2302 | 2315  | 2352 | 2383  | 2378 | 1064 |
| 35° | 2004 | 2010  | 2056 | 2104  | 2102 | 1244 |
| 45° | 1612 | 1642  | 1669 | 1712  | 1672 | 1247 |
| 55° | 1205 | 1197  | 1228 | 1220  | 1220 | 1072 |
| 65° | 740  | 730   | 759  | 730   | 735  | 736  |
| 75° | 308  | 302   | 307  | 286   | 296  | 330  |
| 85° | 38   | 37    | 37   | 36    | 35   | 55   |
| 90° | 0    | 0     | 0    | 0     | 0    |      |



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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|-------|--------|--------|--------|--------|--------|
| 0°    | 2708.4 | 2708.4 | 2708.4 | 2708.4 | 2708.4 |
| 2.5°  | 2731.8 | 2711.2 | 2691.9 | 2714.3 | 2728.0 |
| 5°    | 2689.2 | 2682.9 | 2690.2 | 2682.2 | 2746.9 |
| 7.5°  | 2633.9 | 2658.0 | 2672.0 | 2663.3 | 2667.1 |
| 10°   | 2604.5 | 2596.1 | 2627.3 | 2648.9 | 2645.8 |
| 12.5° | 2573.1 | 2585.6 | 2587.4 | 2610.8 | 2612.9 |
| 15°   | 2574.8 | 2545.1 | 2560.8 | 2574.1 | 2575.2 |
| 17.5° | 2474.8 | 2507.0 | 2517.8 | 2548.2 | 2510.5 |
| 20°   | 2462.5 | 2439.1 | 2462.5 | 2493.7 | 2488.8 |
| 22.5° | 2387.4 | 2361.1 | 2411.5 | 2439.1 | 2437.4 |
| 25°   | 2302.0 | 2314.6 | 2352.4 | 2383.2 | 2378.3 |
| 27.5° | 2227.2 | 2241.9 | 2295.7 | 2338.1 | 2310.8 |
| 30°   | 2169.5 | 2162.2 | 2207.6 | 2245.4 | 2266.4 |
| 32.5° | 2066.3 | 2092.9 | 2146.1 | 2183.5 | 2163.6 |
| 35°   | 2003.7 | 2009.7 | 2056.2 | 2103.8 | 2102.4 |
| 37.5° | 1894.3 | 1921.9 | 1987.3 | 2000.6 | 1988.4 |
| 40°   | 1800.9 | 1828.6 | 1887.7 | 1902.0 | 1896.0 |
| 42.5° | 1732.0 | 1736.9 | 1787.6 | 1804.1 | 1777.8 |
| 45°   | 1612.1 | 1642.2 | 1669.4 | 1712.5 | 1671.9 |
| 47.5° | 1510.0 | 1524.0 | 1582.7 | 1594.3 | 1572.9 |
| 50°   | 1417.3 | 1422.2 | 1481.3 | 1467.0 | 1453.0 |
| 52.5° | 1300.9 | 1321.5 | 1354.7 | 1351.9 | 1335.5 |
| 55°   | 1205.0 | 1197.0 | 1228.5 | 1220.1 | 1219.7 |
| 57.5° | 1090.0 | 1104.0 | 1129.9 | 1116.6 | 1095.2 |
| 60°   | 982.3  | 982.6  | 992.1  | 977.0  | 974.2  |
| 62.5° | 862.3  | 866.5  | 868.6  | 850.1  | 880.2  |
| 65°   | 740.3  | 730.5  | 759.2  | 730.2  | 735.1  |
| 67.5° | 628.1  | 632.9  | 630.1  | 612.0  | 619.0  |
| 70°   | 514.1  | 520.3  | 515.8  | 495.2  | 501.5  |
| 72.5° | 409.8  | 402.1  | 407.0  | 381.2  | 393.1  |
| 75°   | 308.1  | 301.8  | 307.4  | 285.7  | 295.5  |
| 77.5° | 209.8  | 214.7  | 211.2  | 199.7  | 206.3  |
| 80°   | 138.5  | 134.6  | 134.6  | 128.0  | 129.4  |
| 82.5° | 80.8   | 76.9   | 75.9   | 73.8   | 76.9   |
| 85°   | 37.8   | 36.7   | 37.4   | 36.4   | 35.0   |
| 87.5° | 13.6   | 14.0   | 14.0   | 13.3   | 12.6   |
| 90°   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |

(END OF REPORT)