

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: P588963

Luminaire Tested: **FMR-24-2-LD4-1STD-50-UNV-81-96-EDD**

Issue Date: 12/8/2021



**Test Information**

Test Method: LM-79-08  
Report Number: P588963  
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-LD4-1STD-50-UNV-81-96-EDD  
Description: 2X2 FMR TROFFER WITH .156 CLEAR PC FIXTURE SIDE AND .250 CLEAR  
TEMPERED GLASS ENVIRONMENTAL SIDE LENSES WITH, 80 CRI AND 5000K CCT LEDS  
Light Source: -  
Ballast/Driver: -

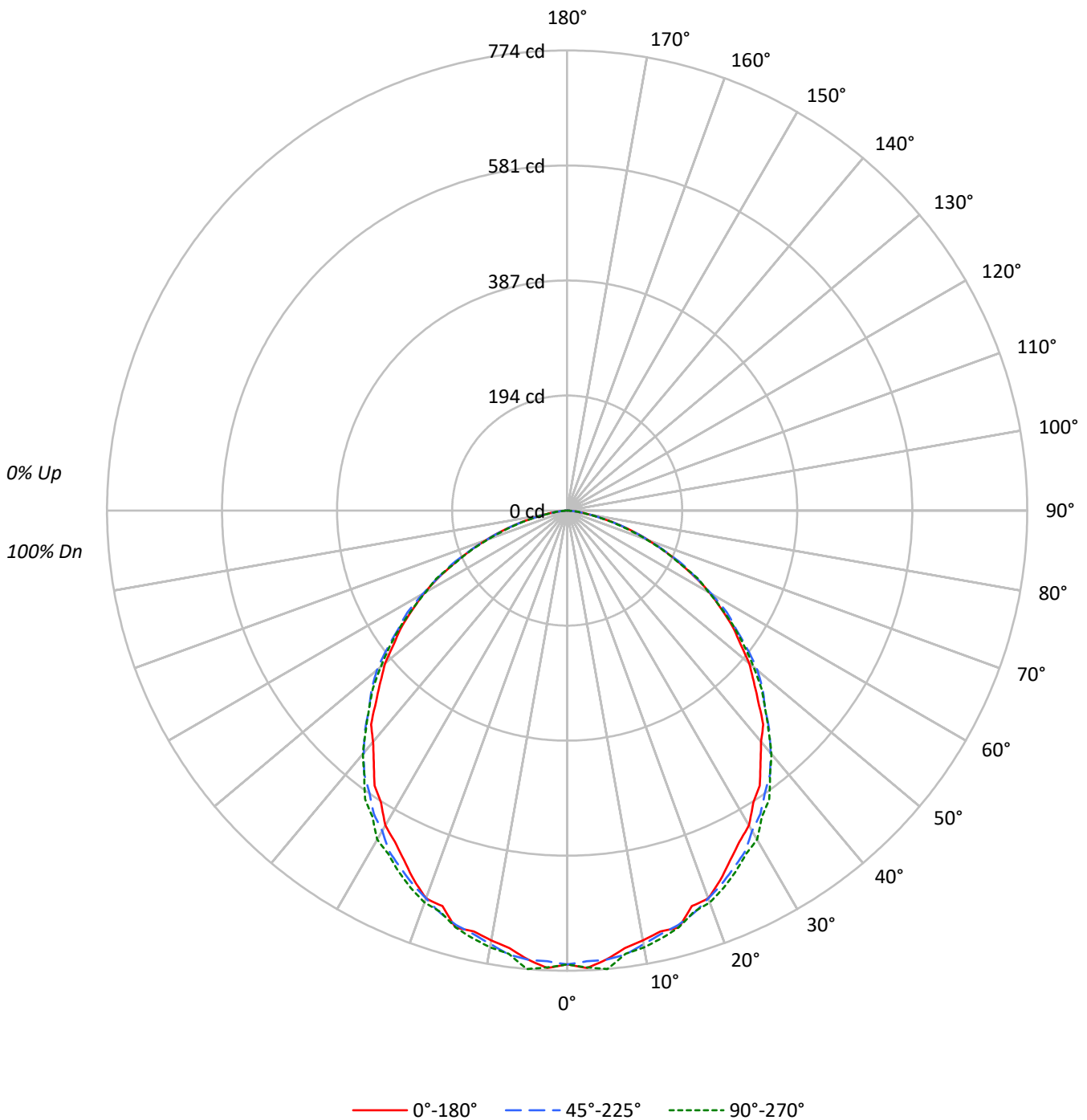
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 1924.0 lumens  
Efficiency: N/A  
Efficacy: 115.9 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): 16.6  
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°  | 2054 | 2054 | 2054 |
| 5°  | 2048 | 2048 | 2091 |
| 10° | 2006 | 2023 | 2038 |
| 15° | 2022 | 2011 | 2022 |
| 20° | 1988 | 1988 | 2009 |
| 25° | 1927 | 1969 | 1990 |
| 30° | 1900 | 1933 | 1985 |
| 35° | 1855 | 1904 | 1947 |
| 40° | 1783 | 1869 | 1877 |
| 45° | 1729 | 1791 | 1793 |
| 50° | 1672 | 1748 | 1714 |
| 55° | 1594 | 1625 | 1613 |
| 60° | 1490 | 1505 | 1478 |
| 65° | 1329 | 1363 | 1319 |
| 70° | 1140 | 1144 | 1112 |
| 75° | 902  | 900  | 866  |
| 80° | 604  | 587  | 566  |
| 85° | 327  | 324  | 306  |



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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 71.8   | 3.7       |
| 10°-20°   | 203.5  | 10.6      |
| 20°-30°   | 304.9  | 15.8      |
| 30°-40°   | 361.4  | 18.8      |
| 40°-50°   | 362.1  | 18.8      |
| 50°-60°   | 307.3  | 16.0      |
| 60°-70°   | 207.2  | 10.8      |
| 70°-80°   | 91.0   | 4.7       |
| 80°-90°   | 14.8   | 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°    | 580.2  | 30.2      |
| 0°-40°    | 941.6  | 48.9      |
| 0°-60°    | 1611.0 | 83.7      |
| 0°-90°    | 1924.0 | 100.0     |
| 90°-120°  | 0.0    | 0.0       |
| 90°-150°  | 0.0    | 0.0       |
| 90°-180°  | 0.0    | 0.0       |
| 0°-180°   | 1924.0 | 100.0     |

**CANDELA DISTRIBUTION:**

|     | 0°  | 22.5° | 45° | 67.5° | 90° | Flux |
|-----|-----|-------|-----|-------|-----|------|
| 0°  | 763 | 763   | 763 | 763   | 763 |      |
| 5°  | 758 | 756   | 758 | 756   | 774 | 71   |
| 15° | 726 | 717   | 722 | 726   | 726 | 202  |
| 25° | 649 | 652   | 663 | 672   | 670 | 300  |
| 35° | 565 | 566   | 580 | 593   | 593 | 351  |
| 45° | 454 | 463   | 471 | 483   | 471 | 351  |
| 55° | 340 | 337   | 346 | 344   | 344 | 302  |
| 65° | 209 | 206   | 214 | 206   | 207 | 208  |
| 75° | 87  | 85    | 87  | 80    | 83  | 93   |
| 85° | 11  | 10    | 10  | 10    | 10  | 15   |
| 90° | 0   | 0     | 0   | 0     | 0   |      |



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**CANDELA DISTRIBUTION (FULL):**

|       | 0°    | 22.5° | 45°   | 67.5° | 90°   |
|-------|-------|-------|-------|-------|-------|
| 0°    | 763.4 | 763.4 | 763.4 | 763.4 | 763.4 |
| 2.5°  | 770.0 | 764.2 | 758.8 | 765.1 | 768.9 |
| 5°    | 758.0 | 756.2 | 758.3 | 756.0 | 774.2 |
| 7.5°  | 742.4 | 749.2 | 753.1 | 750.7 | 751.8 |
| 10°   | 734.1 | 731.8 | 740.5 | 746.6 | 745.8 |
| 12.5° | 725.2 | 728.8 | 729.3 | 735.9 | 736.5 |
| 15°   | 725.7 | 717.4 | 721.8 | 725.5 | 725.8 |
| 17.5° | 697.6 | 706.6 | 709.7 | 718.3 | 707.6 |
| 20°   | 694.1 | 687.5 | 694.1 | 702.9 | 701.5 |
| 22.5° | 672.9 | 665.5 | 679.7 | 687.5 | 687.0 |
| 25°   | 648.9 | 652.4 | 663.1 | 671.7 | 670.3 |
| 27.5° | 627.8 | 631.9 | 647.1 | 659.0 | 651.3 |
| 30°   | 611.5 | 609.4 | 622.2 | 632.9 | 638.8 |
| 32.5° | 582.4 | 589.9 | 604.9 | 615.4 | 609.8 |
| 35°   | 564.8 | 566.5 | 579.6 | 593.0 | 592.6 |
| 37.5° | 533.9 | 541.7 | 560.2 | 563.9 | 560.4 |
| 40°   | 507.6 | 515.4 | 532.1 | 536.1 | 534.4 |
| 42.5° | 488.2 | 489.6 | 503.9 | 508.5 | 501.1 |
| 45°   | 454.4 | 462.9 | 470.6 | 482.7 | 471.2 |
| 47.5° | 425.6 | 429.6 | 446.1 | 449.4 | 443.4 |
| 50°   | 399.5 | 400.9 | 417.5 | 413.5 | 409.5 |
| 52.5° | 366.7 | 372.5 | 381.8 | 381.1 | 376.4 |
| 55°   | 339.7 | 337.4 | 346.3 | 343.9 | 343.8 |
| 57.5° | 307.2 | 311.2 | 318.5 | 314.7 | 308.7 |
| 60°   | 276.9 | 277.0 | 279.6 | 275.4 | 274.6 |
| 62.5° | 243.1 | 244.2 | 244.8 | 239.6 | 248.1 |
| 65°   | 208.7 | 205.9 | 214.0 | 205.8 | 207.2 |
| 67.5° | 177.0 | 178.4 | 177.6 | 172.5 | 174.5 |
| 70°   | 144.9 | 146.7 | 145.4 | 139.6 | 141.3 |
| 72.5° | 115.5 | 113.4 | 114.7 | 107.4 | 110.8 |
| 75°   | 86.8  | 85.1  | 86.6  | 80.5  | 83.3  |
| 77.5° | 59.1  | 60.5  | 59.5  | 56.3  | 58.2  |
| 80°   | 39.0  | 37.9  | 37.9  | 36.1  | 36.5  |
| 82.5° | 22.8  | 21.7  | 21.4  | 20.8  | 21.7  |
| 85°   | 10.6  | 10.3  | 10.5  | 10.3  | 9.9   |
| 87.5° | 3.8   | 3.9   | 3.9   | 3.7   | 3.5   |
| 90°   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |

(END OF REPORT)