

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: P589043

Luminaire Tested: **FMR-24-2-LD4-2HI-40-UNV-93-96-EDD**

Issue Date: 12/8/2021



**Test Information**

Test Method: LM-79-08  
Report Number: P589043  
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-LD4-2HI-40-UNV-93-96-EDD  
Description: 2X2 FMR TROFFER WITH .156 CLEAR TEMPERED GLASS FIXTURE SIDE AND .250 CLEAR TEMPERED GLASS ENVIRONMENTAL SIDE LENSES WITH, 80 CRI AND 4000K CCT LEDS  
Light Source: -  
Ballast/Driver: -

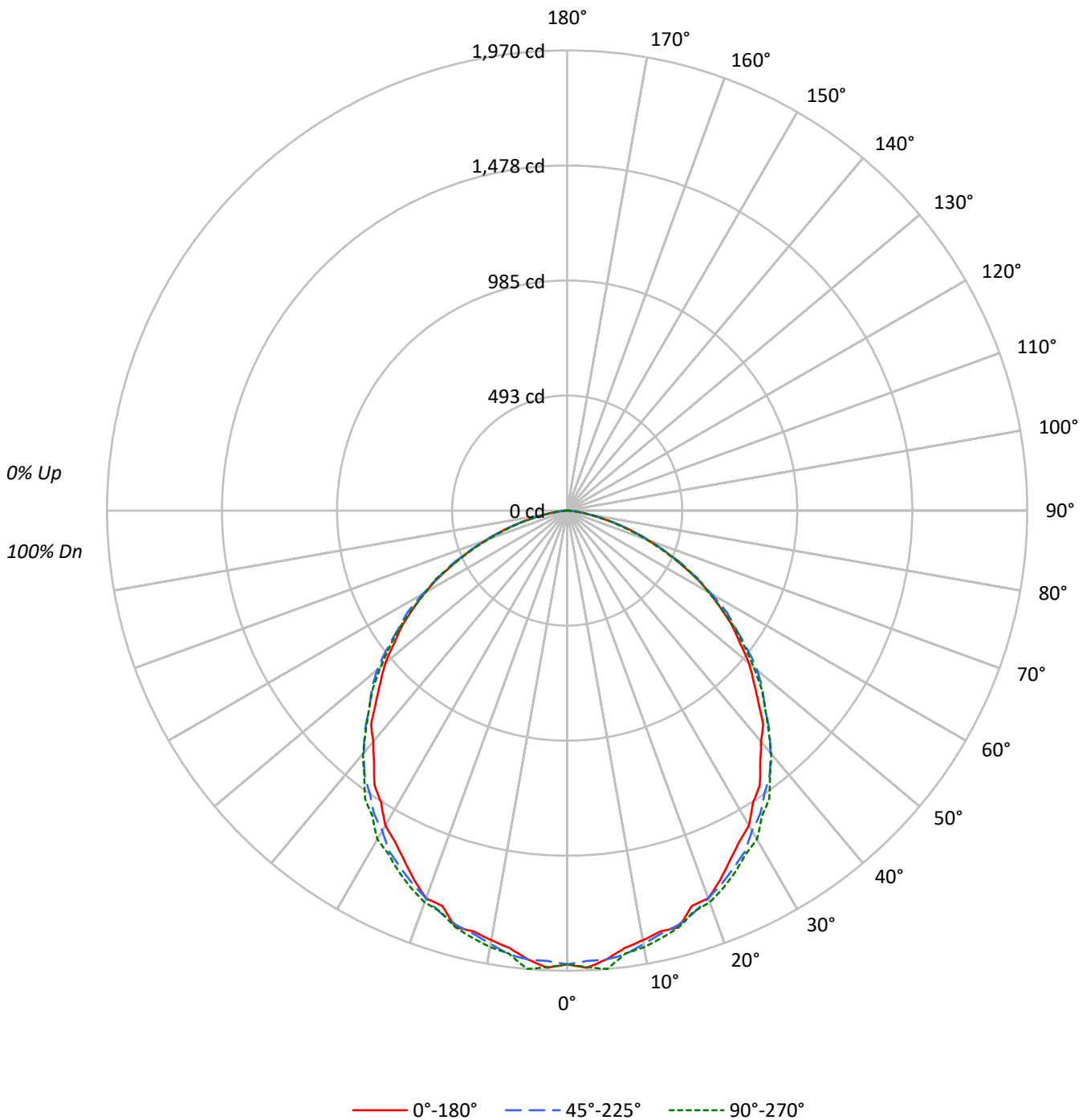
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 4895.0 lumens  
Efficiency: N/A  
Efficacy: 113.3 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): 43.2  
Input Voltage (V): NR  
Input Current (A<sub>in</sub>): 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°  | 5226 | 5226 | 5226 |
| 5°  | 5209 | 5211 | 5321 |
| 10° | 5103 | 5148 | 5184 |
| 15° | 5144 | 5116 | 5145 |
| 20° | 5057 | 5057 | 5111 |
| 25° | 4902 | 5009 | 5064 |
| 30° | 4834 | 4919 | 5050 |
| 35° | 4720 | 4844 | 4953 |
| 40° | 4537 | 4755 | 4776 |
| 45° | 4399 | 4556 | 4563 |
| 50° | 4255 | 4447 | 4362 |
| 55° | 4054 | 4133 | 4104 |
| 60° | 3791 | 3829 | 3760 |
| 65° | 3380 | 3466 | 3356 |
| 70° | 2900 | 2910 | 2829 |
| 75° | 2297 | 2292 | 2203 |
| 80° | 1539 | 1495 | 1438 |
| 85° | 837  | 827  | 775  |



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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 182.7  | 3.7       |
| 10°-20°   | 517.8  | 10.6      |
| 20°-30°   | 775.7  | 15.8      |
| 30°-40°   | 919.4  | 18.8      |
| 40°-50°   | 921.1  | 18.8      |
| 50°-60°   | 781.9  | 16.0      |
| 60°-70°   | 527.1  | 10.8      |
| 70°-80°   | 231.6  | 4.7       |
| 80°-90°   | 37.6   | 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°    | 1476.2 | 30.2      |
| 0°-40°    | 2395.6 | 48.9      |
| 0°-60°    | 4098.6 | 83.7      |
| 0°-90°    | 4895.0 | 100.0     |
| 90°-120°  | 0.0    | 0.0       |
| 90°-150°  | 0.0    | 0.0       |
| 90°-180°  | 0.0    | 0.0       |
| 0°-180°   | 4895.0 | 100.0     |

**CANDELA DISTRIBUTION:**

|     | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|-----|------|-------|------|-------|------|------|
| 0°  | 1942 | 1942  | 1942 | 1942  | 1942 |      |
| 5°  | 1928 | 1924  | 1929 | 1923  | 1970 | 182  |
| 15° | 1846 | 1825  | 1836 | 1846  | 1847 | 514  |
| 25° | 1651 | 1660  | 1687 | 1709  | 1706 | 763  |
| 35° | 1437 | 1441  | 1474 | 1509  | 1508 | 892  |
| 45° | 1156 | 1178  | 1197 | 1228  | 1199 | 894  |
| 55° | 864  | 858   | 881  | 875   | 875  | 769  |
| 65° | 531  | 524   | 544  | 524   | 527  | 528  |
| 75° | 221  | 216   | 220  | 205   | 212  | 237  |
| 85° | 27   | 26    | 27   | 26    | 25   | 39   |
| 90° | 0    | 0     | 0    | 0     | 0    |      |



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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|-------|--------|--------|--------|--------|--------|
| 0°    | 1942.2 | 1942.2 | 1942.2 | 1942.2 | 1942.2 |
| 2.5°  | 1959.0 | 1944.2 | 1930.4 | 1946.5 | 1956.3 |
| 5°    | 1928.4 | 1923.9 | 1929.2 | 1923.4 | 1969.8 |
| 7.5°  | 1888.8 | 1906.1 | 1916.1 | 1909.9 | 1912.6 |
| 10°   | 1867.7 | 1861.7 | 1884.0 | 1899.6 | 1897.3 |
| 12.5° | 1845.2 | 1854.2 | 1855.4 | 1872.2 | 1873.8 |
| 15°   | 1846.4 | 1825.1 | 1836.4 | 1845.9 | 1846.7 |
| 17.5° | 1774.7 | 1797.8 | 1805.5 | 1827.4 | 1800.3 |
| 20°   | 1765.9 | 1749.1 | 1765.9 | 1788.2 | 1784.7 |
| 22.5° | 1712.0 | 1693.2 | 1729.3 | 1749.1 | 1747.9 |
| 25°   | 1650.8 | 1659.8 | 1686.9 | 1709.0 | 1705.5 |
| 27.5° | 1597.2 | 1607.7 | 1646.3 | 1676.6 | 1657.1 |
| 30°   | 1555.8 | 1550.5 | 1583.1 | 1610.2 | 1625.2 |
| 32.5° | 1481.8 | 1500.9 | 1539.0 | 1565.8 | 1551.5 |
| 35°   | 1436.9 | 1441.2 | 1474.5 | 1508.6 | 1507.6 |
| 37.5° | 1358.4 | 1378.2 | 1425.1 | 1434.7 | 1425.9 |
| 40°   | 1291.5 | 1311.3 | 1353.7 | 1363.9 | 1359.7 |
| 42.5° | 1242.1 | 1245.6 | 1281.9 | 1293.7 | 1274.9 |
| 45°   | 1156.0 | 1177.6 | 1197.2 | 1228.0 | 1198.9 |
| 47.5° | 1082.8 | 1092.9 | 1135.0 | 1143.3 | 1128.0 |
| 50°   | 1016.4 | 1019.9 | 1062.3 | 1052.0 | 1041.9 |
| 52.5° | 932.9  | 947.7  | 971.5  | 969.5  | 957.7  |
| 55°   | 864.2  | 858.4  | 881.0  | 874.9  | 874.7  |
| 57.5° | 781.6  | 791.7  | 810.2  | 800.7  | 785.4  |
| 60°   | 704.4  | 704.7  | 711.4  | 700.7  | 698.6  |
| 62.5° | 618.4  | 621.4  | 622.9  | 609.6  | 631.2  |
| 65°   | 530.9  | 523.9  | 544.4  | 523.6  | 527.1  |
| 67.5° | 450.4  | 453.9  | 451.9  | 438.8  | 443.9  |
| 70°   | 368.6  | 373.1  | 369.9  | 355.1  | 359.6  |
| 72.5° | 293.9  | 288.4  | 291.9  | 273.3  | 281.9  |
| 75°   | 220.9  | 216.4  | 220.4  | 204.9  | 211.9  |
| 77.5° | 150.5  | 154.0  | 151.5  | 143.2  | 148.0  |
| 80°   | 99.3   | 96.5   | 96.5   | 91.8   | 92.8   |
| 82.5° | 57.9   | 55.2   | 54.4   | 52.9   | 55.2   |
| 85°   | 27.1   | 26.3   | 26.8   | 26.1   | 25.1   |
| 87.5° | 9.8    | 10.0   | 10.0   | 9.5    | 9.0    |
| 90°   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |

(END OF REPORT)