

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: P589471

Luminaire Tested: **FMR-24-2-LD4-3STD-35-UNV-81-86-EDD**

Issue Date: 12/8/2021



Test Information

Test Method: LM-79-08
Report Number: P589471
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-LD4-3STD-35-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 3500K CCT LEDS
Light Source: -
Ballast/Driver: -

Summary

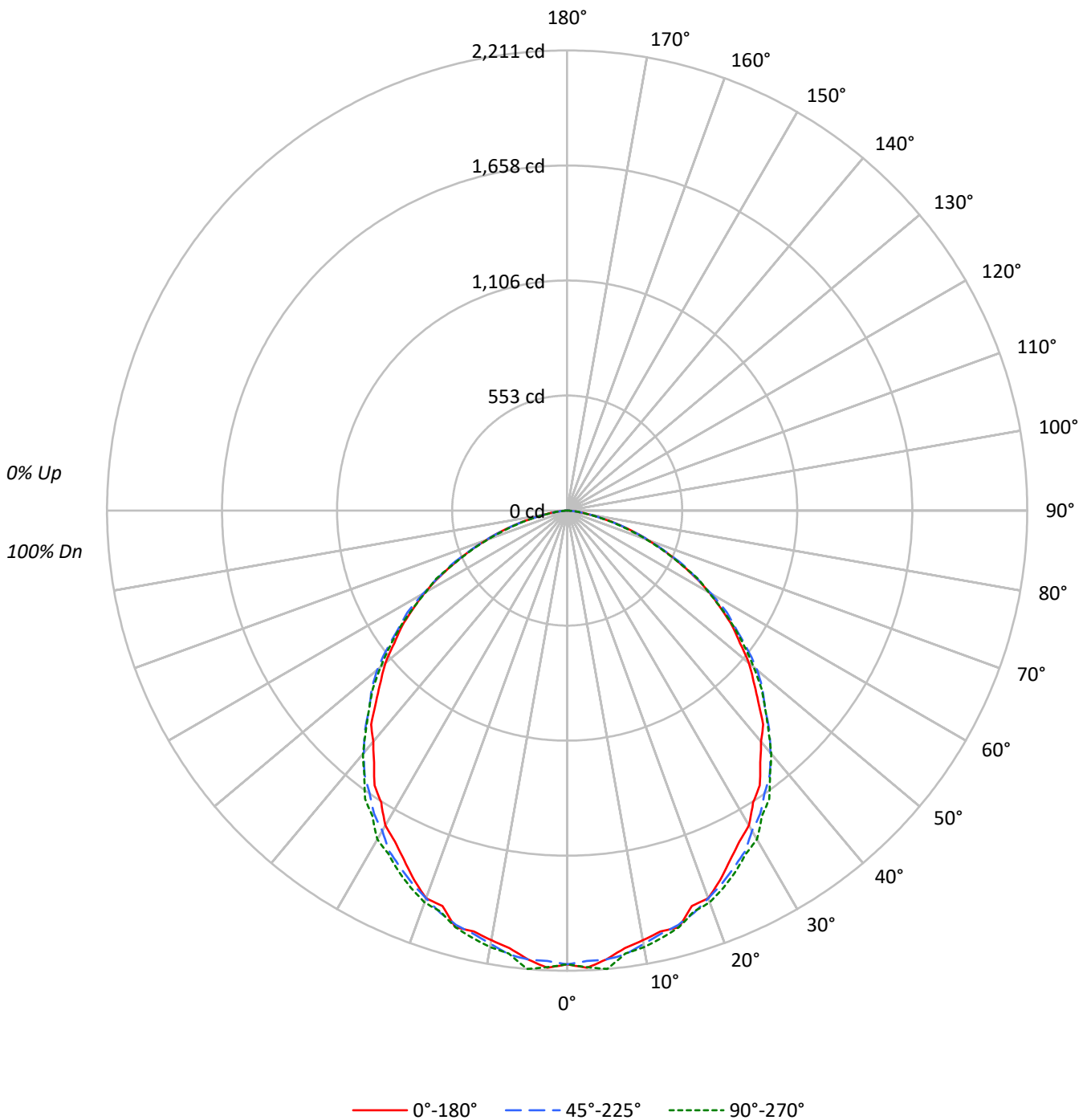
Lumens per Lamp: N/A
Luminaire Lumens: 5494.0 lumens
Efficiency: N/A
Efficacy: 109.9 lumens/watt
Spacing Criteria (0/90/45): 1.19 / 1.23 / 1.33
Luminous Opening: Rectangular (W 2' x L: 2' x H: 0')
CIE Type: Direct

Input Watts (W): 50
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° | 5866 | 5866 | 5866 |
| 5° | 5847 | 5849 | 5972 |
| 10° | 5728 | 5778 | 5819 |
| 15° | 5774 | 5742 | 5774 |
| 20° | 5676 | 5676 | 5736 |
| 25° | 5501 | 5622 | 5684 |
| 30° | 5426 | 5521 | 5668 |
| 35° | 5298 | 5437 | 5559 |
| 40° | 5092 | 5337 | 5361 |
| 45° | 4938 | 5114 | 5121 |
| 50° | 4775 | 4991 | 4896 |
| 55° | 4550 | 4639 | 4606 |
| 60° | 4255 | 4297 | 4220 |
| 65° | 3794 | 3890 | 3767 |
| 70° | 3255 | 3266 | 3175 |
| 75° | 2578 | 2572 | 2472 |
| 80° | 1728 | 1680 | 1613 |
| 85° | 939 | 929 | 868 |



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CATALOG NUMBER: FMR-24-2-LD4-3STD-35-UNV-81-86-EDD

ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10° | 205.0 | 3.7 |
| 10°-20° | 581.1 | 10.6 |
| 20°-30° | 870.7 | 15.8 |
| 30°-40° | 1031.9 | 18.8 |
| 40°-50° | 1033.8 | 18.8 |
| 50°-60° | 877.5 | 16.0 |
| 60°-70° | 591.6 | 10.8 |
| 70°-80° | 260.0 | 4.7 |
| 80°-90° | 42.3 | 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° | 1656.9 | 30.2 |
| 0°-40° | 2688.8 | 48.9 |
| 0°-60° | 4600.1 | 83.7 |
| 0°-90° | 5494.0 | 100.0 |
| 90°-120° | 0.0 | 0.0 |
| 90°-150° | 0.0 | 0.0 |
| 90°-180° | 0.0 | 0.0 |
| 0°-180° | 5494.0 | 100.0 |

CANDELA DISTRIBUTION:

| | 0° | 22.5° | 45° | 67.5° | 90° | Flux |
|-----|------|-------|------|-------|------|------|
| 0° | 2180 | 2180 | 2180 | 2180 | 2180 | |
| 5° | 2164 | 2159 | 2165 | 2159 | 2211 | 204 |
| 15° | 2072 | 2048 | 2061 | 2072 | 2073 | 577 |
| 25° | 1853 | 1863 | 1893 | 1918 | 1914 | 857 |
| 35° | 1613 | 1618 | 1655 | 1693 | 1692 | 1001 |
| 45° | 1298 | 1322 | 1344 | 1378 | 1346 | 1004 |
| 55° | 970 | 963 | 989 | 982 | 982 | 863 |
| 65° | 596 | 588 | 611 | 588 | 592 | 593 |
| 75° | 248 | 243 | 247 | 230 | 238 | 266 |
| 85° | 30 | 30 | 30 | 29 | 28 | 44 |
| 90° | 0 | 0 | 0 | 0 | 0 | |



TEST NUMBER: P589471

CATALOG NUMBER: FMR-24-2-LD4-3STD-35-UNV-81-86-EDD

CANDELA DISTRIBUTION (FULL):

| | 0° | 22.5° | 45° | 67.5° | 90° |
|-------|--------|--------|--------|--------|--------|
| 0° | 2179.9 | 2179.9 | 2179.9 | 2179.9 | 2179.9 |
| 2.5° | 2198.7 | 2182.1 | 2166.7 | 2184.7 | 2195.6 |
| 5° | 2164.4 | 2159.3 | 2165.2 | 2158.8 | 2210.8 |
| 7.5° | 2119.9 | 2139.4 | 2150.6 | 2143.6 | 2146.7 |
| 10° | 2096.3 | 2089.5 | 2114.6 | 2132.0 | 2129.5 |
| 12.5° | 2071.0 | 2081.1 | 2082.5 | 2101.4 | 2103.0 |
| 15° | 2072.4 | 2048.4 | 2061.1 | 2071.8 | 2072.6 |
| 17.5° | 1991.9 | 2017.8 | 2026.5 | 2051.0 | 2020.6 |
| 20° | 1982.0 | 1963.2 | 1982.0 | 2007.1 | 2003.1 |
| 22.5° | 1921.5 | 1900.4 | 1940.9 | 1963.2 | 1961.8 |
| 25° | 1852.8 | 1863.0 | 1893.4 | 1918.1 | 1914.2 |
| 27.5° | 1792.6 | 1804.4 | 1847.8 | 1881.8 | 1859.9 |
| 30° | 1746.2 | 1740.2 | 1776.8 | 1807.2 | 1824.1 |
| 32.5° | 1663.1 | 1684.5 | 1727.3 | 1757.4 | 1741.4 |
| 35° | 1612.7 | 1617.5 | 1655.0 | 1693.2 | 1692.1 |
| 37.5° | 1524.6 | 1546.9 | 1599.5 | 1610.2 | 1600.4 |
| 40° | 1449.5 | 1471.7 | 1519.3 | 1530.8 | 1526.1 |
| 42.5° | 1394.1 | 1398.0 | 1438.8 | 1452.0 | 1430.9 |
| 45° | 1297.5 | 1321.7 | 1343.7 | 1378.3 | 1345.6 |
| 47.5° | 1215.3 | 1226.6 | 1273.9 | 1283.2 | 1266.0 |
| 50° | 1140.7 | 1144.7 | 1192.2 | 1180.7 | 1169.5 |
| 52.5° | 1047.0 | 1063.6 | 1090.4 | 1088.1 | 1074.9 |
| 55° | 969.9 | 963.4 | 988.8 | 982.0 | 981.7 |
| 57.5° | 877.3 | 888.6 | 909.4 | 898.7 | 881.5 |
| 60° | 790.6 | 790.9 | 798.5 | 786.4 | 784.1 |
| 62.5° | 694.1 | 697.4 | 699.1 | 684.2 | 708.4 |
| 65° | 595.8 | 588.0 | 611.0 | 587.7 | 591.6 |
| 67.5° | 505.5 | 509.4 | 507.2 | 492.5 | 498.2 |
| 70° | 413.7 | 418.8 | 415.1 | 398.5 | 403.6 |
| 72.5° | 329.9 | 323.7 | 327.6 | 306.8 | 316.4 |
| 75° | 248.0 | 242.9 | 247.4 | 229.9 | 237.8 |
| 77.5° | 168.9 | 172.8 | 170.0 | 160.7 | 166.1 |
| 80° | 111.5 | 108.4 | 108.4 | 103.0 | 104.1 |
| 82.5° | 65.0 | 61.9 | 61.1 | 59.4 | 61.9 |
| 85° | 30.4 | 29.6 | 30.1 | 29.3 | 28.1 |
| 87.5° | 11.0 | 11.3 | 11.3 | 10.7 | 10.1 |
| 90° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

(END OF REPORT)