

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: P589299

Luminaire Tested: **FMR-24-2-LD4-3HI-35-UNV-93-96-EDD**

Issue Date: 12/8/2021



Test Information

Test Method: LM-79-08
Report Number: P589299
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-35-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 3500K CCT LEDS
Light Source: -
Ballast/Driver: -

Summary

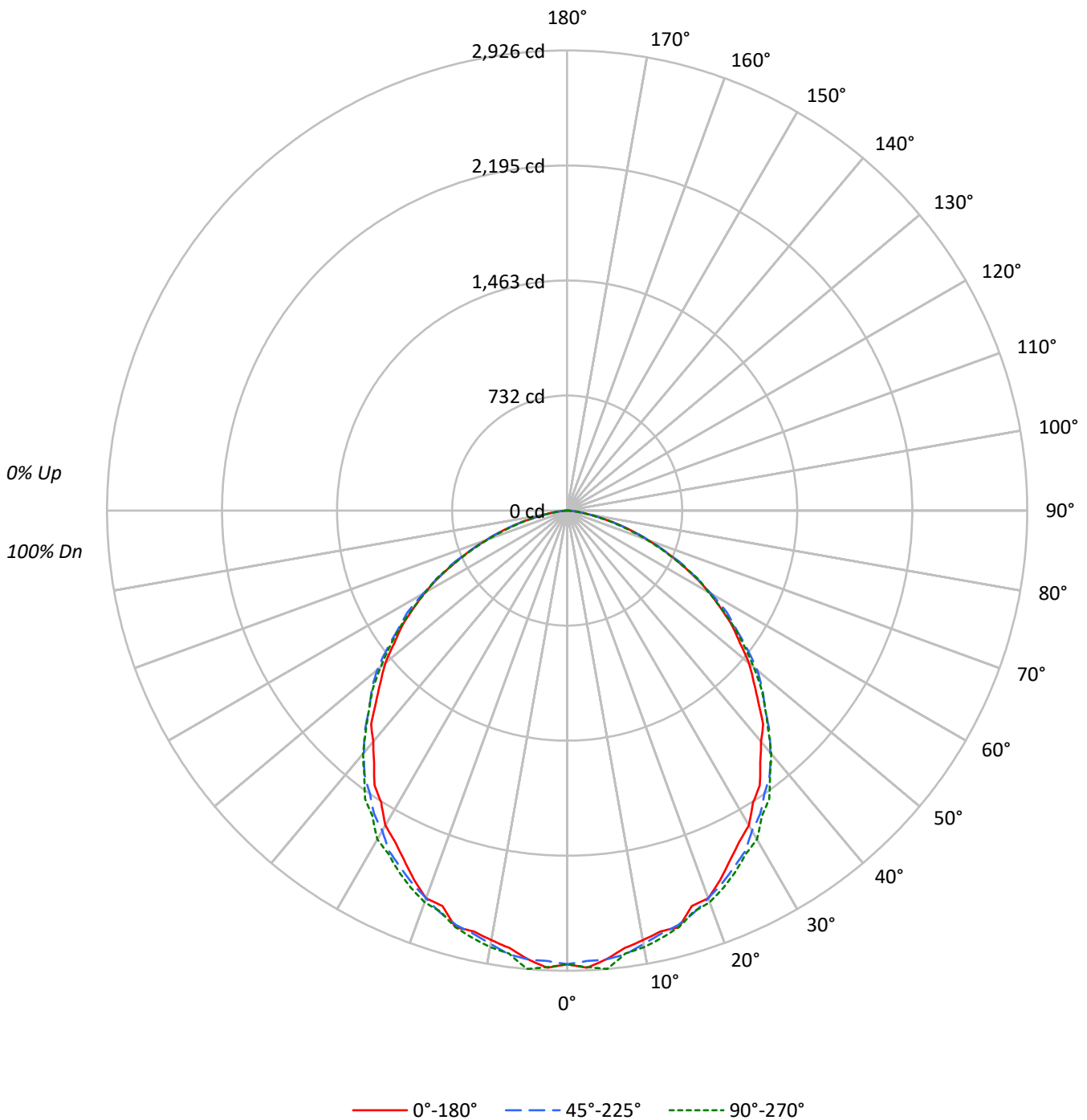
Lumens per Lamp: N/A
Luminaire Lumens: 7270.0 lumens
Efficiency: N/A
Efficacy: 112.2 lumens/watt
Spacing Criteria (0/90/45): 1.19 / 1.23 / 1.33
Luminous Opening: Rectangular (W 2' x L: 2' x H: 0')
CIE Type: Direct

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° | 7762 | 7762 | 7762 |
| 5° | 7737 | 7740 | 7903 |
| 10° | 7580 | 7646 | 7700 |
| 15° | 7640 | 7598 | 7641 |
| 20° | 7511 | 7511 | 7591 |
| 25° | 7280 | 7439 | 7521 |
| 30° | 7180 | 7306 | 7500 |
| 35° | 7011 | 7194 | 7356 |
| 40° | 6738 | 7062 | 7094 |
| 45° | 6534 | 6766 | 6776 |
| 50° | 6319 | 6605 | 6478 |
| 55° | 6021 | 6138 | 6095 |
| 60° | 5631 | 5687 | 5584 |
| 65° | 5021 | 5149 | 4985 |
| 70° | 4308 | 4322 | 4202 |
| 75° | 3411 | 3404 | 3272 |
| 80° | 2286 | 2222 | 2135 |
| 85° | 1241 | 1232 | 1149 |



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ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10° | 271.3 | 3.7 |
| 10°-20° | 769.0 | 10.6 |
| 20°-30° | 1152.1 | 15.8 |
| 30°-40° | 1365.5 | 18.8 |
| 40°-50° | 1368.0 | 18.8 |
| 50°-60° | 1161.2 | 16.0 |
| 60°-70° | 782.9 | 10.8 |
| 70°-80° | 344.0 | 4.7 |
| 80°-90° | 55.9 | 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° | 2192.5 | 30.2 |
| 0°-40° | 3558.0 | 48.9 |
| 0°-60° | 6087.2 | 83.7 |
| 0°-90° | 7270.0 | 100.0 |
| 90°-120° | 0.0 | 0.0 |
| 90°-150° | 0.0 | 0.0 |
| 90°-180° | 0.0 | 0.0 |
| 0°-180° | 7270.0 | 100.0 |

CANDELA DISTRIBUTION:

| | 0° | 22.5° | 45° | 67.5° | 90° | Flux |
|-----|------|-------|------|-------|------|------|
| 0° | 2885 | 2885 | 2885 | 2885 | 2885 | |
| 5° | 2864 | 2857 | 2865 | 2857 | 2926 | 270 |
| 15° | 2742 | 2711 | 2727 | 2742 | 2743 | 764 |
| 25° | 2452 | 2465 | 2505 | 2538 | 2533 | 1133 |
| 35° | 2134 | 2140 | 2190 | 2241 | 2239 | 1325 |
| 45° | 1717 | 1749 | 1778 | 1824 | 1781 | 1328 |
| 55° | 1283 | 1275 | 1308 | 1299 | 1299 | 1142 |
| 65° | 788 | 778 | 809 | 778 | 783 | 784 |
| 75° | 328 | 321 | 327 | 304 | 315 | 352 |
| 85° | 40 | 39 | 40 | 39 | 37 | 58 |
| 90° | 0 | 0 | 0 | 0 | 0 | |



TEST NUMBER: P589299

CATALOG NUMBER: FMR-24-2-LD4-3HI-35-UNV-93-96-EDD

CANDELA DISTRIBUTION (FULL):

| | 0° | 22.5° | 45° | 67.5° | 90° |
|-------|--------|--------|--------|--------|--------|
| 0° | 2884.6 | 2884.6 | 2884.6 | 2884.6 | 2884.6 |
| 2.5° | 2909.5 | 2887.5 | 2867.0 | 2890.9 | 2905.4 |
| 5° | 2864.1 | 2857.4 | 2865.2 | 2856.6 | 2925.5 |
| 7.5° | 2805.2 | 2830.9 | 2845.8 | 2836.5 | 2840.6 |
| 10° | 2773.9 | 2765.0 | 2798.1 | 2821.2 | 2817.9 |
| 12.5° | 2740.4 | 2753.8 | 2755.7 | 2780.6 | 2782.9 |
| 15° | 2742.3 | 2710.6 | 2727.4 | 2741.5 | 2742.7 |
| 17.5° | 2635.8 | 2670.0 | 2681.6 | 2714.0 | 2673.8 |
| 20° | 2622.7 | 2597.8 | 2622.7 | 2655.9 | 2650.7 |
| 22.5° | 2542.7 | 2514.7 | 2568.4 | 2597.8 | 2595.9 |
| 25° | 2451.8 | 2465.2 | 2505.4 | 2538.2 | 2533.0 |
| 27.5° | 2372.1 | 2387.7 | 2445.1 | 2490.1 | 2461.1 |
| 30° | 2310.6 | 2302.8 | 2351.2 | 2391.4 | 2413.8 |
| 32.5° | 2200.8 | 2229.1 | 2285.7 | 2325.5 | 2304.3 |
| 35° | 2134.1 | 2140.4 | 2190.0 | 2240.6 | 2239.1 |
| 37.5° | 2017.5 | 2046.9 | 2116.6 | 2130.7 | 2117.7 |
| 40° | 1918.1 | 1947.5 | 2010.4 | 2025.7 | 2019.4 |
| 42.5° | 1844.7 | 1849.9 | 1903.9 | 1921.4 | 1893.5 |
| 45° | 1717.0 | 1749.0 | 1778.0 | 1823.8 | 1780.6 |
| 47.5° | 1608.2 | 1623.1 | 1685.7 | 1698.0 | 1675.2 |
| 50° | 1509.5 | 1514.7 | 1577.7 | 1562.4 | 1547.5 |
| 52.5° | 1385.5 | 1407.5 | 1442.8 | 1439.9 | 1422.4 |
| 55° | 1283.4 | 1274.9 | 1308.4 | 1299.4 | 1299.1 |
| 57.5° | 1160.9 | 1175.8 | 1203.4 | 1189.2 | 1166.5 |
| 60° | 1046.2 | 1046.6 | 1056.6 | 1040.6 | 1037.6 |
| 62.5° | 918.4 | 922.9 | 925.1 | 905.4 | 937.4 |
| 65° | 788.5 | 778.0 | 808.6 | 777.7 | 782.9 |
| 67.5° | 668.9 | 674.1 | 671.1 | 651.8 | 659.2 |
| 70° | 547.5 | 554.2 | 549.3 | 527.4 | 534.1 |
| 72.5° | 436.5 | 428.3 | 433.5 | 406.0 | 418.6 |
| 75° | 328.1 | 321.4 | 327.4 | 304.3 | 314.7 |
| 77.5° | 223.5 | 228.7 | 225.0 | 212.7 | 219.7 |
| 80° | 147.5 | 143.4 | 143.4 | 136.3 | 137.8 |
| 82.5° | 86.0 | 81.9 | 80.8 | 78.6 | 81.9 |
| 85° | 40.2 | 39.1 | 39.9 | 38.7 | 37.2 |
| 87.5° | 14.5 | 14.9 | 14.9 | 14.2 | 13.4 |
| 90° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

(END OF REPORT)