

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: P589089

Luminaire Tested: **FMR-24-2-LD4-2LO-35-UNV-81-88-EDD**

Issue Date: 12/8/2021



Test Information

Test Method: LM-79-08
Report Number: P589089
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-LD4-2LO-35-UNV-81-88-EDD
Description: 2X2 FMR TROFFER WITH .156 CLEAR PC FIXTURE SIDE AND .500 CLEAR PC ENVIRONMENTAL SIDE LENSES WITH, 80 CRI AND 3500K CCT LEDS
Light Source: -
Ballast/Driver: -

Summary

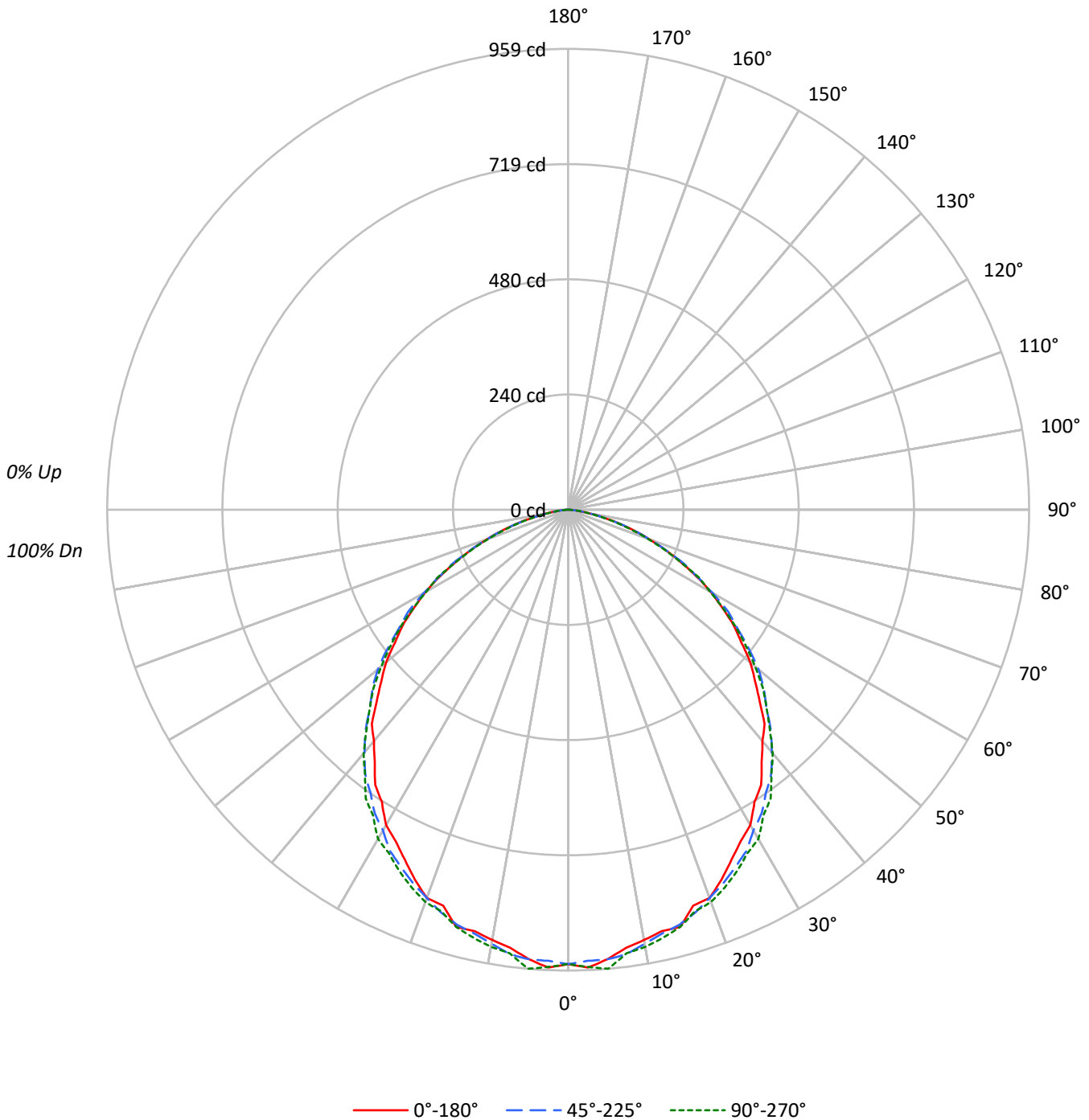
Lumens per Lamp: N/A
Luminaire Lumens: 2383.0 lumens
Efficiency: N/A
Efficacy: 101.8 lumens/watt
Spacing Criteria (0/90/45): 1.19 / 1.23 / 1.33
Luminous Opening: Rectangular (W 2' x L: 2' x H: 0')
CIE Type: Direct

Input Watts (W): 23.4
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° | 2544 | 2544 | 2544 |
| 5° | 2536 | 2537 | 2590 |
| 10° | 2485 | 2506 | 2524 |
| 15° | 2504 | 2491 | 2505 |
| 20° | 2462 | 2462 | 2488 |
| 25° | 2386 | 2438 | 2465 |
| 30° | 2353 | 2395 | 2458 |
| 35° | 2298 | 2358 | 2411 |
| 40° | 2209 | 2315 | 2325 |
| 45° | 2142 | 2218 | 2221 |
| 50° | 2071 | 2165 | 2123 |
| 55° | 1974 | 2012 | 1998 |
| 60° | 1845 | 1864 | 1830 |
| 65° | 1645 | 1687 | 1634 |
| 70° | 1412 | 1417 | 1378 |
| 75° | 1119 | 1116 | 1073 |
| 80° | 748 | 728 | 700 |
| 85° | 408 | 404 | 377 |



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ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10° | 88.9 | 3.7 |
| 10°-20° | 252.1 | 10.6 |
| 20°-30° | 377.7 | 15.8 |
| 30°-40° | 447.6 | 18.8 |
| 40°-50° | 448.4 | 18.8 |
| 50°-60° | 380.6 | 16.0 |
| 60°-70° | 256.6 | 10.8 |
| 70°-80° | 112.8 | 4.7 |
| 80°-90° | 18.3 | 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° | 718.7 | 30.2 |
| 0°-40° | 1166.3 | 48.9 |
| 0°-60° | 1995.3 | 83.7 |
| 0°-90° | 2383.0 | 100.0 |
| 90°-120° | 0.0 | 0.0 |
| 90°-150° | 0.0 | 0.0 |
| 90°-180° | 0.0 | 0.0 |
| 0°-180° | 2383.0 | 100.0 |

CANDELA DISTRIBUTION:

| | 0° | 22.5° | 45° | 67.5° | 90° | Flux |
|-----|-----|-------|-----|-------|-----|------|
| 0° | 946 | 946 | 946 | 946 | 946 | |
| 5° | 939 | 937 | 939 | 936 | 959 | 89 |
| 15° | 899 | 888 | 894 | 899 | 899 | 250 |
| 25° | 804 | 808 | 821 | 832 | 830 | 372 |
| 35° | 700 | 702 | 718 | 734 | 734 | 434 |
| 45° | 563 | 573 | 583 | 598 | 584 | 435 |
| 55° | 421 | 418 | 429 | 426 | 426 | 374 |
| 65° | 258 | 255 | 265 | 255 | 257 | 257 |
| 75° | 108 | 105 | 107 | 100 | 103 | 115 |
| 85° | 13 | 13 | 13 | 13 | 12 | 19 |
| 90° | 0 | 0 | 0 | 0 | 0 | |



TEST NUMBER: P589089

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CANDELA DISTRIBUTION (FULL):

| | 0° | 22.5° | 45° | 67.5° | 90° |
|-------|-------|-------|-------|-------|-------|
| 0° | 945.5 | 945.5 | 945.5 | 945.5 | 945.5 |
| 2.5° | 953.7 | 946.5 | 939.8 | 947.6 | 952.4 |
| 5° | 938.8 | 936.6 | 939.2 | 936.4 | 958.9 |
| 7.5° | 919.5 | 927.9 | 932.8 | 929.8 | 931.1 |
| 10° | 909.3 | 906.3 | 917.2 | 924.8 | 923.7 |
| 12.5° | 898.3 | 902.7 | 903.3 | 911.5 | 912.2 |
| 15° | 898.9 | 888.5 | 894.0 | 898.6 | 899.0 |
| 17.5° | 864.0 | 875.2 | 879.0 | 889.6 | 876.4 |
| 20° | 859.7 | 851.5 | 859.7 | 870.6 | 868.8 |
| 22.5° | 833.4 | 824.3 | 841.9 | 851.5 | 850.9 |
| 25° | 803.7 | 808.1 | 821.2 | 832.0 | 830.3 |
| 27.5° | 777.5 | 782.7 | 801.5 | 816.2 | 806.7 |
| 30° | 757.4 | 754.8 | 770.7 | 783.9 | 791.2 |
| 32.5° | 721.4 | 730.7 | 749.2 | 762.3 | 755.3 |
| 35° | 699.5 | 701.6 | 717.8 | 734.4 | 733.9 |
| 37.5° | 661.3 | 671.0 | 693.8 | 698.4 | 694.2 |
| 40° | 628.7 | 638.4 | 659.0 | 664.0 | 661.9 |
| 42.5° | 604.7 | 606.4 | 624.1 | 629.8 | 620.7 |
| 45° | 562.8 | 573.3 | 582.8 | 597.8 | 583.7 |
| 47.5° | 527.1 | 532.0 | 552.5 | 556.6 | 549.1 |
| 50° | 494.8 | 496.5 | 517.1 | 512.1 | 507.2 |
| 52.5° | 454.1 | 461.3 | 472.9 | 472.0 | 466.2 |
| 55° | 420.7 | 417.9 | 428.9 | 425.9 | 425.8 |
| 57.5° | 380.5 | 385.4 | 394.4 | 389.8 | 382.4 |
| 60° | 342.9 | 343.0 | 346.3 | 341.1 | 340.1 |
| 62.5° | 301.1 | 302.5 | 303.2 | 296.8 | 307.3 |
| 65° | 258.4 | 255.0 | 265.0 | 254.9 | 256.6 |
| 67.5° | 219.3 | 221.0 | 220.0 | 213.6 | 216.1 |
| 70° | 179.5 | 181.7 | 180.1 | 172.9 | 175.1 |
| 72.5° | 143.1 | 140.4 | 142.1 | 133.1 | 137.2 |
| 75° | 107.6 | 105.4 | 107.3 | 99.7 | 103.2 |
| 77.5° | 73.2 | 75.0 | 73.7 | 69.7 | 72.0 |
| 80° | 48.3 | 47.0 | 47.0 | 44.7 | 45.2 |
| 82.5° | 28.2 | 26.9 | 26.5 | 25.8 | 26.9 |
| 85° | 13.2 | 12.8 | 13.1 | 12.7 | 12.2 |
| 87.5° | 4.8 | 4.9 | 4.9 | 4.6 | 4.4 |
| 90° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

(END OF REPORT)