

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: P546104

Luminaire Tested: **FMR-12-4-LD4-2HI-35-UNV-80-85-EDD**

Issue Date: 6/15/2021

This test was performed under the Supervised Manufacturer's Testing Program. The results of this test have not been influenced by sources from within Cooper Lighting Solutions or from external interests.



Test Information

Test Method: LM-79-08
Report Number: P546104
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-2102-135-5)
Test Lab: INNOVATION CENTER
Issue Date: 6/15/2021
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: FAIL-SAFE
Catalog Number: FMR-12-4-LD4-2HI-35-UNV-80-85-EDD
Description: 1X4 FMR TROFFER WITH .125 PRISMATIC ACRYLIC FIXTURE SIDE AND .187 CLEAR PC ENVIRONMENTAL SIDE LENSES WITH, 90 CRI AND 3500K CCT LEDS
Light Source: -
Ballast/Driver: -

Luminaire Equipment: Sample No. Condition Description

Summary

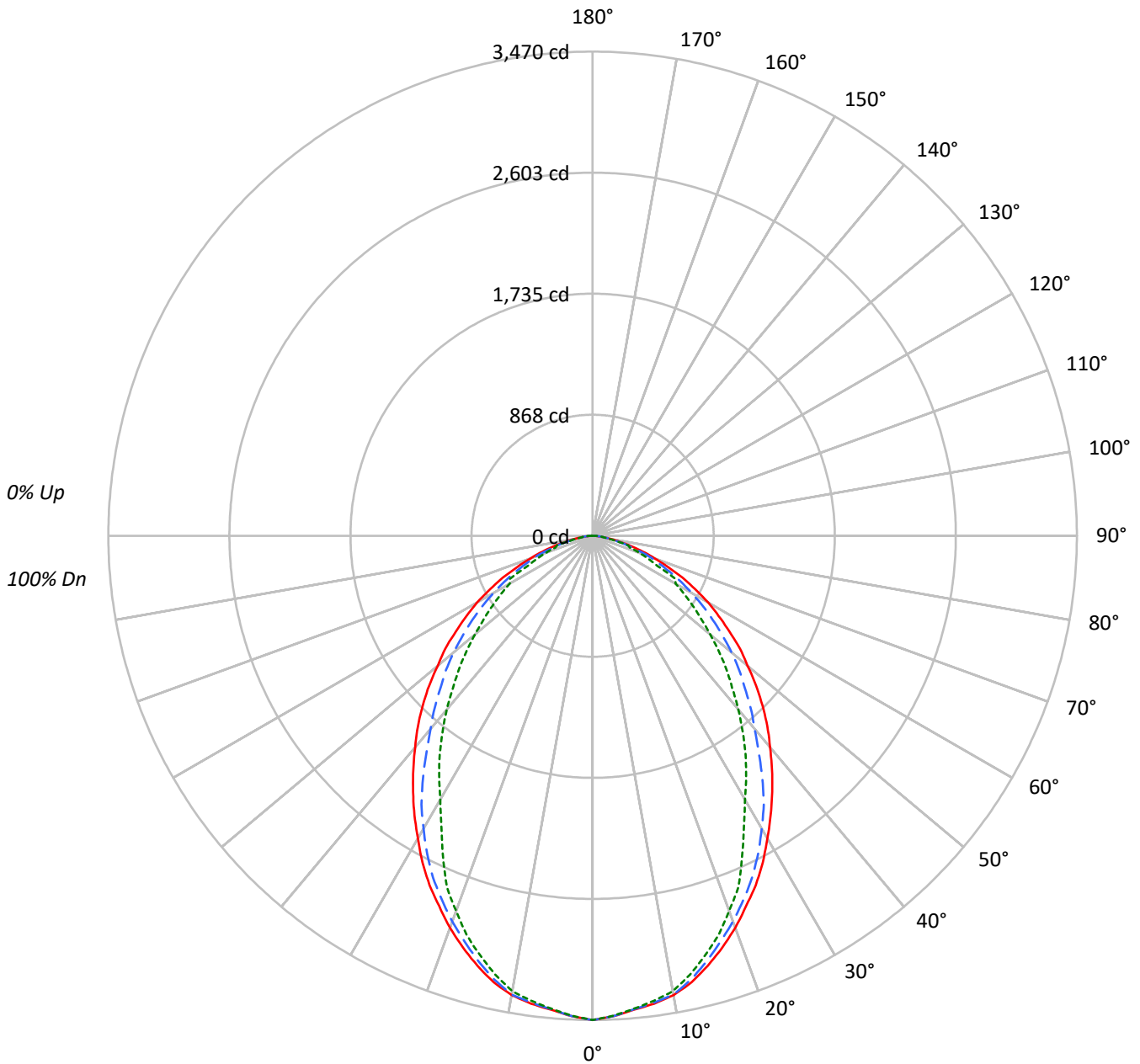
Lumens per Lamp: N/A
Luminaire Lumens: 6813.0 lumens
Efficiency: N/A
Efficacy: 78.9 lumens/watt
Spacing Criteria (0/90/45): 1.1 / 1 / 1.15
Luminous Opening: Rectangular (W 1' x L: 4' x H: 0')
CIE Type: Direct

Input Watts (W): 86.4
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





TEST NUMBER: P546104

CATALOG NUMBER: FMR-12-4-LD4-2HI-35-UNV-80-85-EDD

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 | 0 | | | | | |
| RCR | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | 119 | 119 | 119 | 119 | 116 | 116 | 116 | 116 | 111 | 111 | 111 | 106 | 106 | 106 | 102 | 102 | 102 | 100 | | | | | | | | |
| 1 | 110 | 106 | 102 | 99 | 108 | 104 | 100 | 97 | 100 | 97 | 94 | 96 | 94 | 91 | 92 | 90 | 89 | 87 | | | | | | | | |
| 2 | 101 | 94 | 88 | 83 | 99 | 92 | 87 | 82 | 89 | 84 | 80 | 86 | 82 | 78 | 83 | 79 | 77 | 75 | | | | | | | | |
| 3 | 93 | 84 | 77 | 71 | 91 | 82 | 76 | 70 | 79 | 74 | 69 | 77 | 72 | 68 | 74 | 70 | 67 | 65 | | | | | | | | |
| 4 | 86 | 75 | 67 | 61 | 84 | 74 | 66 | 61 | 72 | 65 | 60 | 69 | 64 | 59 | 67 | 62 | 58 | 56 | | | | | | | | |
| 5 | 80 | 68 | 60 | 54 | 78 | 67 | 59 | 53 | 65 | 58 | 53 | 63 | 57 | 52 | 61 | 56 | 52 | 50 | | | | | | | | |
| 6 | 74 | 62 | 53 | 48 | 72 | 61 | 53 | 47 | 59 | 52 | 47 | 57 | 51 | 47 | 56 | 50 | 46 | 44 | | | | | | | | |
| 7 | 69 | 56 | 48 | 43 | 67 | 56 | 48 | 42 | 54 | 47 | 42 | 53 | 46 | 42 | 51 | 46 | 42 | 40 | | | | | | | | |
| 8 | 65 | 52 | 44 | 38 | 63 | 51 | 44 | 38 | 50 | 43 | 38 | 49 | 42 | 38 | 48 | 42 | 38 | 36 | | | | | | | | |
| 9 | 61 | 48 | 40 | 35 | 59 | 47 | 40 | 35 | 46 | 39 | 35 | 45 | 39 | 34 | 44 | 38 | 34 | 33 | | | | | | | | |
| 10 | 57 | 44 | 37 | 32 | 56 | 44 | 37 | 32 | 43 | 36 | 32 | 42 | 36 | 32 | 41 | 36 | 32 | 30 | | | | | | | | |

AVERAGE LUMINANCE (cd/sqm):

| | 0° | 45° | 90° |
|-----|------|------|------|
| 0° | 9339 | 9339 | 9339 |
| 5° | 9212 | 9201 | 9190 |
| 10° | 9132 | 9121 | 9055 |
| 15° | 8886 | 8796 | 8674 |
| 20° | 8560 | 8422 | 8192 |
| 25° | 8208 | 8029 | 7529 |
| 30° | 7779 | 7530 | 6782 |
| 35° | 7368 | 6959 | 6274 |
| 40° | 6948 | 6342 | 5708 |
| 45° | 6550 | 5863 | 5161 |
| 50° | 6064 | 5442 | 4602 |
| 55° | 5609 | 4932 | 4122 |
| 60° | 5139 | 4405 | 3693 |
| 65° | 4521 | 3857 | 3270 |
| 70° | 3725 | 3378 | 2778 |
| 75° | 2962 | 2586 | 2712 |
| 80° | 1990 | 1866 | 1740 |
| 85° | 1238 | 1485 | 1735 |



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ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10° | 323.1 | 4.7 |
| 10°-20° | 886.6 | 13.0 |
| 20°-30° | 1227.4 | 18.0 |
| 30°-40° | 1308.8 | 19.2 |
| 40°-50° | 1194.0 | 17.5 |
| 50°-60° | 935.4 | 13.7 |
| 60°-70° | 609.7 | 8.9 |
| 70°-80° | 270.1 | 4.0 |
| 80°-90° | 58.0 | 0.9 |
| 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° | 2437.1 | 35.8 |
| 0°-40° | 3745.9 | 55.0 |
| 0°-60° | 5875.3 | 86.2 |
| 0°-90° | 6813.0 | 100.0 |
| 90°-120° | 0.0 | 0.0 |
| 90°-150° | 0.0 | 0.0 |
| 90°-180° | 0.0 | 0.0 |
| 0°-180° | 6813.0 | 100.0 |

CANDELA DISTRIBUTION:

| | 0° | 22.5° | 45° | 67.5° | 90° | Flux |
|-----|------|-------|------|-------|------|------|
| 0° | 3470 | 3470 | 3470 | 3470 | 3470 | |
| 5° | 3410 | 3406 | 3406 | 3402 | 3402 | 324 |
| 15° | 3190 | 3190 | 3158 | 3125 | 3113 | 897 |
| 25° | 2764 | 2748 | 2704 | 2608 | 2536 | 1269 |
| 35° | 2243 | 2227 | 2118 | 1958 | 1910 | 1402 |
| 45° | 1721 | 1685 | 1541 | 1412 | 1356 | 1326 |
| 55° | 1196 | 1160 | 1051 | 927 | 879 | 1072 |
| 65° | 710 | 670 | 606 | 618 | 514 | 700 |
| 75° | 285 | 265 | 249 | 237 | 261 | 305 |
| 85° | 40 | 44 | 48 | 52 | 56 | 56 |
| 90° | 0 | 0 | 0 | 0 | 0 | |



TEST NUMBER: P546104

CATALOG NUMBER: FMR-12-4-LD4-2HI-35-UNV-80-85-EDD

CANDELA DISTRIBUTION (FULL):

| | 0° | 22.5° | 45° | 67.5° | 90° |
|-------|--------|--------|--------|--------|--------|
| 0° | 3470.5 | 3470.5 | 3470.5 | 3470.5 | 3470.5 |
| 2.5° | 3446.4 | 3446.4 | 3446.4 | 3442.4 | 3442.4 |
| 5° | 3410.3 | 3406.3 | 3406.3 | 3402.2 | 3402.2 |
| 7.5° | 3382.2 | 3378.2 | 3374.2 | 3370.1 | 3362.1 |
| 10° | 3342.1 | 3342.1 | 3338.1 | 3318.0 | 3314.0 |
| 12.5° | 3277.9 | 3273.9 | 3257.8 | 3229.7 | 3221.7 |
| 15° | 3189.6 | 3189.6 | 3157.5 | 3125.4 | 3113.4 |
| 17.5° | 3093.3 | 3089.3 | 3049.2 | 3017.1 | 3001.0 |
| 20° | 2989.0 | 2981.0 | 2940.9 | 2888.7 | 2860.6 |
| 22.5° | 2872.7 | 2872.7 | 2824.5 | 2756.3 | 2728.2 |
| 25° | 2764.3 | 2748.3 | 2704.1 | 2607.9 | 2535.6 |
| 27.5° | 2640.0 | 2615.9 | 2567.7 | 2431.3 | 2347.1 |
| 30° | 2503.5 | 2491.5 | 2423.3 | 2246.8 | 2182.6 |
| 32.5° | 2375.2 | 2355.1 | 2282.9 | 2098.3 | 2046.2 |
| 35° | 2242.8 | 2226.7 | 2118.4 | 1957.9 | 1909.8 |
| 37.5° | 2110.4 | 2090.3 | 1953.9 | 1825.5 | 1765.3 |
| 40° | 1978.0 | 1953.9 | 1805.4 | 1689.1 | 1624.9 |
| 42.5° | 1853.6 | 1821.5 | 1677.1 | 1552.7 | 1480.5 |
| 45° | 1721.2 | 1685.1 | 1540.6 | 1412.3 | 1356.1 |
| 47.5° | 1588.8 | 1556.7 | 1424.3 | 1291.9 | 1227.7 |
| 50° | 1448.4 | 1420.3 | 1299.9 | 1167.5 | 1099.3 |
| 52.5° | 1332.0 | 1287.9 | 1171.5 | 1039.1 | 983.0 |
| 55° | 1195.6 | 1159.5 | 1051.2 | 926.8 | 878.6 |
| 57.5° | 1071.2 | 1035.1 | 934.8 | 818.5 | 778.3 |
| 60° | 954.9 | 902.7 | 818.5 | 718.2 | 686.1 |
| 62.5° | 826.5 | 786.4 | 714.2 | 629.9 | 670.0 |
| 65° | 710.1 | 670.0 | 605.8 | 617.9 | 513.5 |
| 67.5° | 581.8 | 561.7 | 505.5 | 449.4 | 433.3 |
| 70° | 473.4 | 449.4 | 429.3 | 369.1 | 353.1 |
| 72.5° | 377.1 | 353.1 | 325.0 | 292.9 | 280.8 |
| 75° | 284.9 | 264.8 | 248.7 | 236.7 | 260.8 |
| 77.5° | 196.6 | 188.6 | 176.5 | 164.5 | 160.5 |
| 80° | 128.4 | 124.4 | 120.4 | 116.4 | 112.3 |
| 82.5° | 76.2 | 76.2 | 76.2 | 76.2 | 76.2 |
| 85° | 40.1 | 44.1 | 48.1 | 52.2 | 56.2 |
| 87.5° | 24.1 | 24.1 | 28.1 | 32.1 | 36.1 |
| 90° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |



Report Generated By 670246072 / DESKTOP-MV3F9LC





— 0°-180° - - 45°-225° - - - - 90°-270°







(END OF REPORT)