

Scaled data based on original data using
LM-79-2019 Approved Method: Electrical and Photometric Measurements of Solid-
State Lighting Products

Test Report Prepared for
Cooper Lighting Solutions

Brand: iO LED

Report Number: P958831

Luminaire Tested: MMG-03W-930-10x60-ID-X-X-4F-4-UNV-STD-X

Issue Date: 1/31/2025

Test Information

Test Method: LM-79-2019
Report Number: P958831
SCALED TEST REPORT
Test Lab: COOPER LIGHTING SOLUTIONS
Issue Date: 1/31/2025
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: iO LED
Catalog Number: MMG-03W-930-10x60-ID-X-X-4F-4-UNV-STD-X
Description: iO LED MiniO-Graze LINEAR LIGHTING WITH 10x60 DEGREE OPTICS
3 WATTS PER FOOT
Light Source: 3000K CCT, 90 CRI LEDS
Ballast/Driver: -

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 312.5 lumens
Efficiency: N/A
Efficacy: 28.9 lumens/watt
Spacing Criteria (0/90/45): 0.18 / 0.91 / 0.25
Luminous Opening: Rectangular w/ Sides (W: 0.07' x L: 4' x H: 0.09')
CIE Type: Direct

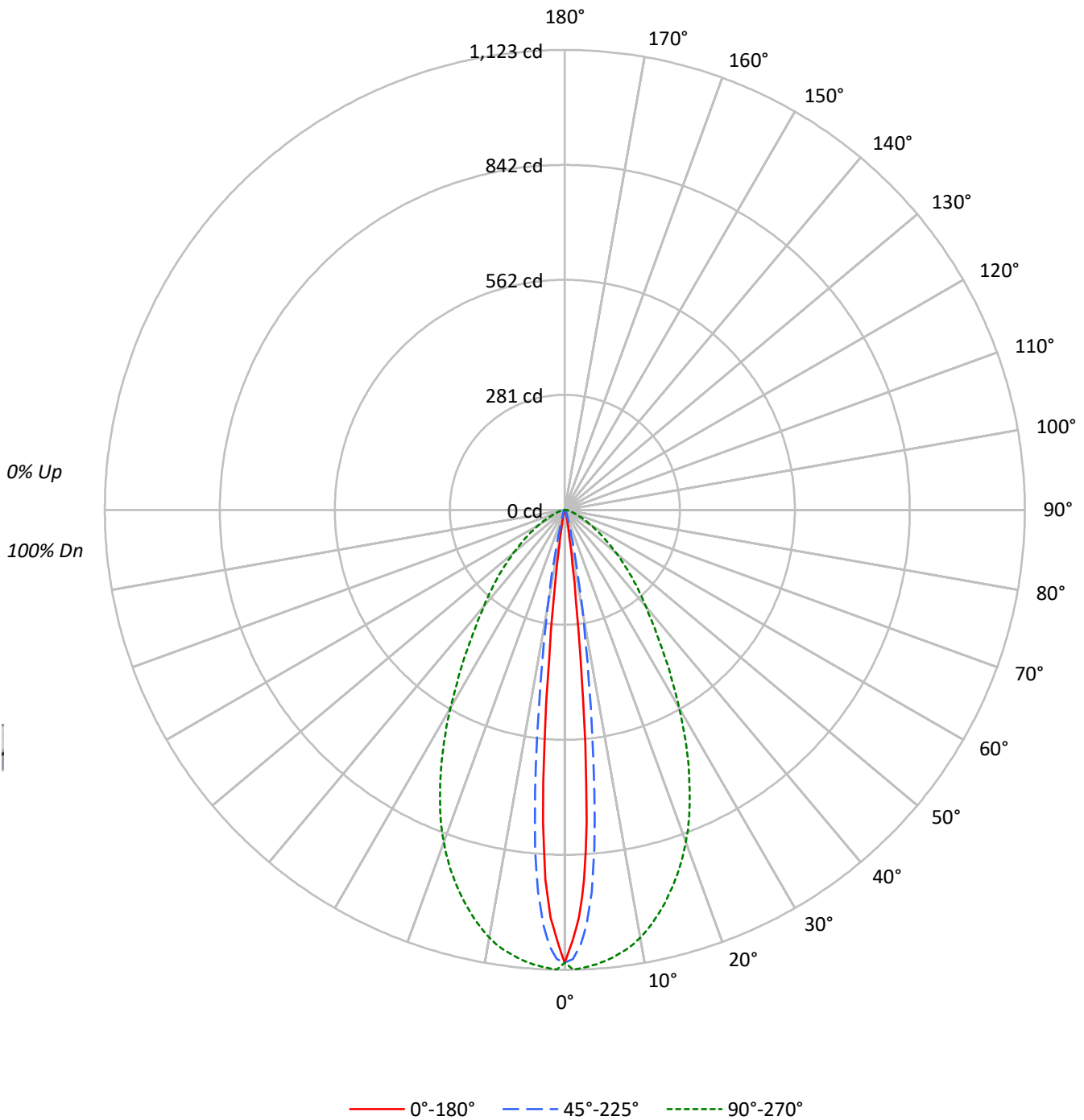
Input Watts (W): 10.8
Input Voltage (V): 120
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 24 FT



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Luminous Intensity Polar Plot





TEST NUMBER: P958831

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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 | 0 | |
| RCR | | | | | | | | | | | | | | | | | | | | | | |
| 0 | 119 | 119 | 119 | 119 | 116 | 116 | 116 | 116 | 111 | 111 | 111 | 106 | 106 | 106 | 102 | 102 | 102 | 100 | | | | |
| 1 | 113 | 110 | 107 | 104 | 110 | 107 | 105 | 103 | 103 | 101 | 99 | 100 | 98 | 96 | 96 | 95 | 94 | 92 | | | | |
| 2 | 106 | 101 | 96 | 93 | 104 | 99 | 95 | 92 | 96 | 93 | 90 | 93 | 90 | 88 | 90 | 88 | 86 | 84 | | | | |
| 3 | 100 | 93 | 88 | 84 | 98 | 92 | 87 | 83 | 89 | 85 | 82 | 87 | 83 | 80 | 85 | 82 | 79 | 77 | | | | |
| 4 | 95 | 87 | 81 | 76 | 93 | 86 | 80 | 76 | 84 | 79 | 75 | 81 | 77 | 74 | 80 | 76 | 73 | 72 | | | | |
| 5 | 90 | 81 | 75 | 70 | 88 | 80 | 74 | 70 | 78 | 73 | 69 | 77 | 72 | 69 | 75 | 71 | 68 | 67 | | | | |
| 6 | 86 | 76 | 70 | 65 | 84 | 75 | 70 | 65 | 74 | 69 | 65 | 73 | 68 | 64 | 71 | 67 | 64 | 62 | | | | |
| 7 | 82 | 72 | 66 | 61 | 80 | 71 | 65 | 61 | 70 | 65 | 61 | 69 | 64 | 60 | 68 | 63 | 60 | 59 | | | | |
| 8 | 78 | 68 | 62 | 58 | 77 | 68 | 62 | 58 | 66 | 61 | 57 | 65 | 61 | 57 | 64 | 60 | 57 | 55 | | | | |
| 9 | 75 | 65 | 59 | 55 | 73 | 64 | 59 | 55 | 63 | 58 | 54 | 62 | 58 | 54 | 62 | 57 | 54 | 53 | | | | |
| 10 | 72 | 62 | 56 | 52 | 71 | 61 | 56 | 52 | 61 | 55 | 52 | 60 | 55 | 52 | 59 | 55 | 52 | 50 | | | | |

AVERAGE LUMINANCE (cd/sqm):

| | 0° | 45° | 90° |
|-----|-------|-------|-------|
| 0° | 43200 | 43200 | 43200 |
| 5° | 22380 | 30232 | 39141 |
| 10° | 2224 | 8350 | 34535 |
| 15° | 587 | 1642 | 29627 |
| 20° | 293 | 568 | 24750 |
| 25° | 213 | 289 | 19628 |
| 30° | 214 | 194 | 14675 |
| 35° | 164 | 156 | 10568 |
| 40° | 140 | 143 | 7682 |
| 45° | 130 | 134 | 5666 |
| 50° | 130 | 124 | 3998 |
| 55° | 119 | 105 | 2758 |
| 60° | 121 | 86 | 1786 |
| 65° | 141 | 70 | 1097 |
| 70° | 140 | 60 | 633 |
| 75° | 140 | 49 | 328 |
| 80° | 161 | 41 | 154 |
| 85° | 252 | 40 | 56 |

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 90°
 Vertical Angle: 45°
 Luminance: 5666 cd/sqm



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ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10° | 63.9 | 20.4 |
| 10°-20° | 71.5 | 22.9 |
| 20°-30° | 59.7 | 19.1 |
| 30°-40° | 44.7 | 14.3 |
| 40°-50° | 33.6 | 10.8 |
| 50°-60° | 22.4 | 7.2 |
| 60°-70° | 11.3 | 3.6 |
| 70°-80° | 4.1 | 1.3 |
| 80°-90° | 1.4 | 0.4 |
| 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° | 195.0 | 62.4 |
| 0°-40° | 239.8 | 76.7 |
| 0°-60° | 295.8 | 94.6 |
| 0°-90° | 312.5 | 100.0 |
| 90°-120° | 0.0 | 0.0 |
| 90°-150° | 0.0 | 0.0 |
| 90°-180° | 0.0 | 0.0 |
| 0°-180° | 312.5 | 100.0 |

CANDELA DISTRIBUTION:

| | 0° | 22.5° | 45° | 67.5° | 90° | Flux |
|-----|------|-------|------|-------|------|------|
| 0° | 1106 | 1106 | 1106 | 1106 | 1106 | |
| 5° | 572 | 631 | 831 | 1034 | 1106 | 34 |
| 15° | 15 | 18 | 50 | 428 | 976 | 5 |
| 25° | 5 | 6 | 10 | 141 | 718 | 2 |
| 35° | 4 | 4 | 5 | 64 | 414 | 2 |
| 45° | 2 | 3 | 5 | 51 | 230 | 2 |
| 55° | 2 | 2 | 4 | 38 | 112 | 2 |
| 65° | 2 | 2 | 2 | 18 | 43 | 2 |
| 75° | 1 | 1 | 1 | 6 | 12 | 1 |
| 85° | 1 | 1 | 1 | 2 | 2 | 1 |
| 90° | 1 | 1 | 1 | 1 | 1 | |



TEST NUMBER: P958831

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CANDELA DISTRIBUTION (FULL):

| | 0° | 22.5° | 45° | 67.5° | 90° |
|-----|--------|--------|--------|--------|--------|
| 0° | 1106.1 | 1106.1 | 1106.1 | 1106.1 | 1106.1 |
| 1° | 1053.0 | 1075.7 | 1097.8 | 1114.3 | 1122.6 |
| 2° | 995.9 | 1019.6 | 1066.6 | 1106.9 | 1120.4 |
| 3° | 904.7 | 936.0 | 1013.4 | 1088.9 | 1117.0 |
| 4° | 763.8 | 803.7 | 936.0 | 1063.8 | 1112.0 |
| 5° | 571.9 | 631.4 | 831.2 | 1034.4 | 1106.5 |
| 6° | 366.2 | 439.1 | 691.1 | 999.0 | 1100.4 |
| 7° | 223.5 | 294.8 | 551.9 | 953.8 | 1092.2 |
| 8° | 134.8 | 193.8 | 423.3 | 903.7 | 1083.5 |
| 9° | 84.4 | 121.2 | 322.3 | 841.6 | 1073.4 |
| 10° | 56.3 | 77.2 | 243.6 | 763.2 | 1060.9 |
| 11° | 39.9 | 54.1 | 174.9 | 698.3 | 1046.5 |
| 12° | 29.8 | 39.2 | 128.6 | 627.4 | 1030.9 |
| 13° | 22.3 | 28.9 | 90.6 | 546.6 | 1013.5 |
| 14° | 17.9 | 22.5 | 64.2 | 489.0 | 995.4 |
| 15° | 14.6 | 18.1 | 50.3 | 428.3 | 975.8 |
| 16° | 12.0 | 15.2 | 38.9 | 387.2 | 955.8 |
| 17° | 9.9 | 12.7 | 30.5 | 341.7 | 934.3 |
| 18° | 8.7 | 10.5 | 25.0 | 307.0 | 912.6 |
| 19° | 7.7 | 9.3 | 21.0 | 270.8 | 888.7 |
| 20° | 7.1 | 8.1 | 18.1 | 244.8 | 863.8 |
| 21° | 6.5 | 7.4 | 15.5 | 218.6 | 837.9 |
| 22° | 6.0 | 6.8 | 13.9 | 192.3 | 810.2 |
| 23° | 5.6 | 6.3 | 12.0 | 174.7 | 779.6 |
| 24° | 5.3 | 6.0 | 10.5 | 155.8 | 748.8 |
| 25° | 5.0 | 5.6 | 9.5 | 140.6 | 718.4 |
| 26° | 4.8 | 5.3 | 8.8 | 126.6 | 687.6 |
| 27° | 4.8 | 5.0 | 8.0 | 115.2 | 655.5 |
| 28° | 4.8 | 4.9 | 7.4 | 104.7 | 622.4 |
| 29° | 4.8 | 4.6 | 6.9 | 95.0 | 590.1 |
| 30° | 4.8 | 4.6 | 6.5 | 87.1 | 558.0 |
| 31° | 4.6 | 4.6 | 6.3 | 81.3 | 526.2 |
| 32° | 4.5 | 4.6 | 5.9 | 75.6 | 496.0 |
| 33° | 4.2 | 4.6 | 5.7 | 70.8 | 468.4 |
| 34° | 3.7 | 4.6 | 5.5 | 67.0 | 441.0 |
| 35° | 3.5 | 4.5 | 5.3 | 63.8 | 413.8 |
| 36° | 3.3 | 4.3 | 5.2 | 60.9 | 388.4 |
| 37° | 3.1 | 3.9 | 5.1 | 59.3 | 366.5 |
| 38° | 3.0 | 3.7 | 5.0 | 57.4 | 345.7 |
| 39° | 2.9 | 3.5 | 5.0 | 56.1 | 325.1 |
| 40° | 2.8 | 3.3 | 4.9 | 55.0 | 307.2 |
| 41° | 2.7 | 3.2 | 4.9 | 53.8 | 290.6 |
| 42° | 2.7 | 3.1 | 4.8 | 53.1 | 274.0 |
| 43° | 2.6 | 3.0 | 4.8 | 52.3 | 259.0 |
| 44° | 2.5 | 2.9 | 4.8 | 51.5 | 244.8 |

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CATALOG NUMBER: MMG-03W-930-10x60-ID-X-X-4F-4-UNV-STD-X

CANDELA DISTRIBUTION (continued):

| | 0° | 22.5° | 45° | 67.5° | 90° |
|-----|-----|-------|-----|-------|-------|
| 45° | 2.4 | 2.9 | 4.6 | 50.8 | 229.6 |
| 46° | 2.4 | 2.7 | 4.6 | 49.9 | 214.9 |
| 47° | 2.3 | 2.7 | 4.5 | 49.3 | 200.7 |
| 48° | 2.3 | 2.6 | 4.4 | 48.1 | 187.5 |
| 49° | 2.2 | 2.4 | 4.3 | 47.2 | 174.5 |
| 50° | 2.2 | 2.4 | 4.2 | 46.1 | 162.9 |
| 51° | 2.2 | 2.3 | 4.1 | 44.8 | 151.1 |
| 52° | 2.0 | 2.3 | 3.9 | 43.1 | 140.1 |
| 53° | 2.0 | 2.2 | 3.8 | 41.4 | 129.8 |
| 54° | 1.9 | 2.2 | 3.7 | 39.7 | 120.6 |
| 55° | 1.8 | 2.0 | 3.5 | 37.7 | 112.1 |
| 56° | 1.8 | 2.0 | 3.4 | 35.8 | 102.6 |
| 57° | 1.6 | 1.9 | 3.3 | 33.8 | 93.5 |
| 58° | 1.6 | 1.8 | 3.1 | 31.7 | 85.9 |
| 59° | 1.6 | 1.8 | 3.0 | 29.7 | 78.9 |
| 60° | 1.6 | 1.7 | 2.8 | 27.6 | 71.9 |
| 61° | 1.6 | 1.6 | 2.7 | 25.7 | 65.5 |
| 62° | 1.5 | 1.6 | 2.5 | 23.7 | 59.3 |
| 63° | 1.6 | 1.6 | 2.4 | 21.9 | 53.6 |
| 64° | 1.6 | 1.5 | 2.3 | 20.1 | 48.2 |
| 65° | 1.6 | 1.5 | 2.2 | 18.3 | 43.4 |
| 66° | 1.6 | 1.5 | 2.1 | 16.6 | 39.0 |
| 67° | 1.5 | 1.5 | 2.0 | 15.0 | 34.8 |
| 68° | 1.4 | 1.4 | 1.9 | 13.5 | 31.0 |
| 69° | 1.3 | 1.4 | 1.8 | 12.1 | 27.6 |
| 70° | 1.3 | 1.3 | 1.8 | 10.8 | 24.4 |
| 71° | 1.2 | 1.2 | 1.6 | 9.5 | 21.6 |
| 72° | 1.2 | 1.2 | 1.6 | 8.4 | 18.8 |
| 73° | 1.1 | 1.2 | 1.5 | 7.5 | 16.3 |
| 74° | 1.1 | 1.1 | 1.5 | 6.5 | 14.1 |
| 75° | 1.0 | 1.1 | 1.4 | 5.7 | 12.2 |
| 76° | 1.0 | 1.0 | 1.4 | 5.0 | 10.5 |
| 77° | 0.9 | 0.9 | 1.3 | 4.4 | 9.0 |
| 78° | 0.9 | 0.9 | 1.2 | 3.8 | 7.6 |
| 79° | 0.8 | 0.8 | 1.2 | 3.3 | 6.5 |
| 80° | 0.8 | 0.8 | 1.1 | 2.9 | 5.5 |
| 81° | 0.7 | 0.7 | 1.1 | 2.6 | 4.6 |
| 82° | 0.7 | 0.7 | 1.1 | 2.3 | 3.7 |
| 83° | 0.7 | 0.7 | 1.0 | 2.1 | 3.1 |
| 84° | 0.7 | 0.7 | 1.0 | 2.0 | 2.4 |
| 85° | 0.7 | 0.6 | 1.0 | 1.8 | 1.9 |
| 86° | 0.6 | 0.6 | 1.0 | 1.8 | 1.5 |
| 87° | 0.6 | 0.5 | 1.0 | 1.6 | 1.2 |
| 88° | 0.5 | 0.5 | 0.9 | 1.5 | 1.0 |
| 89° | 0.5 | 0.5 | 0.9 | 1.4 | 0.9 |



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CANDELA DISTRIBUTION (continued):

| | 0° | 22.5° | 45° | 67.5° | 90° |
|-----|-----|-------|-----|-------|-----|
| 90° | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 |

(END OF REPORT)