

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: P958855

Luminaire Tested: MMG-05W-940-10x60-ID-X-X-4F-4-UNV-STD-X

Issue Date: 1/31/2025

Test Information

Test Method: LM-79-2019
Report Number: P958855
SCALED TEST REPORT
Test Lab: COOPER LIGHTING SOLUTIONS
Issue Date: 1/31/2025
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: iO LED
Catalog Number: MMG-05W-940-10x60-ID-X-X-4F-4-UNV-STD-X
Description: iO LED MiniO-Graze LINEAR LIGHTING WITH 10x60 DEGREE OPTICS
5 WATTS PER FOOT
Light Source: 4000K CCT, 90 CRI LEDS
Ballast/Driver: -

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 605.6 lumens
Efficiency: N/A
Efficacy: 33.6 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

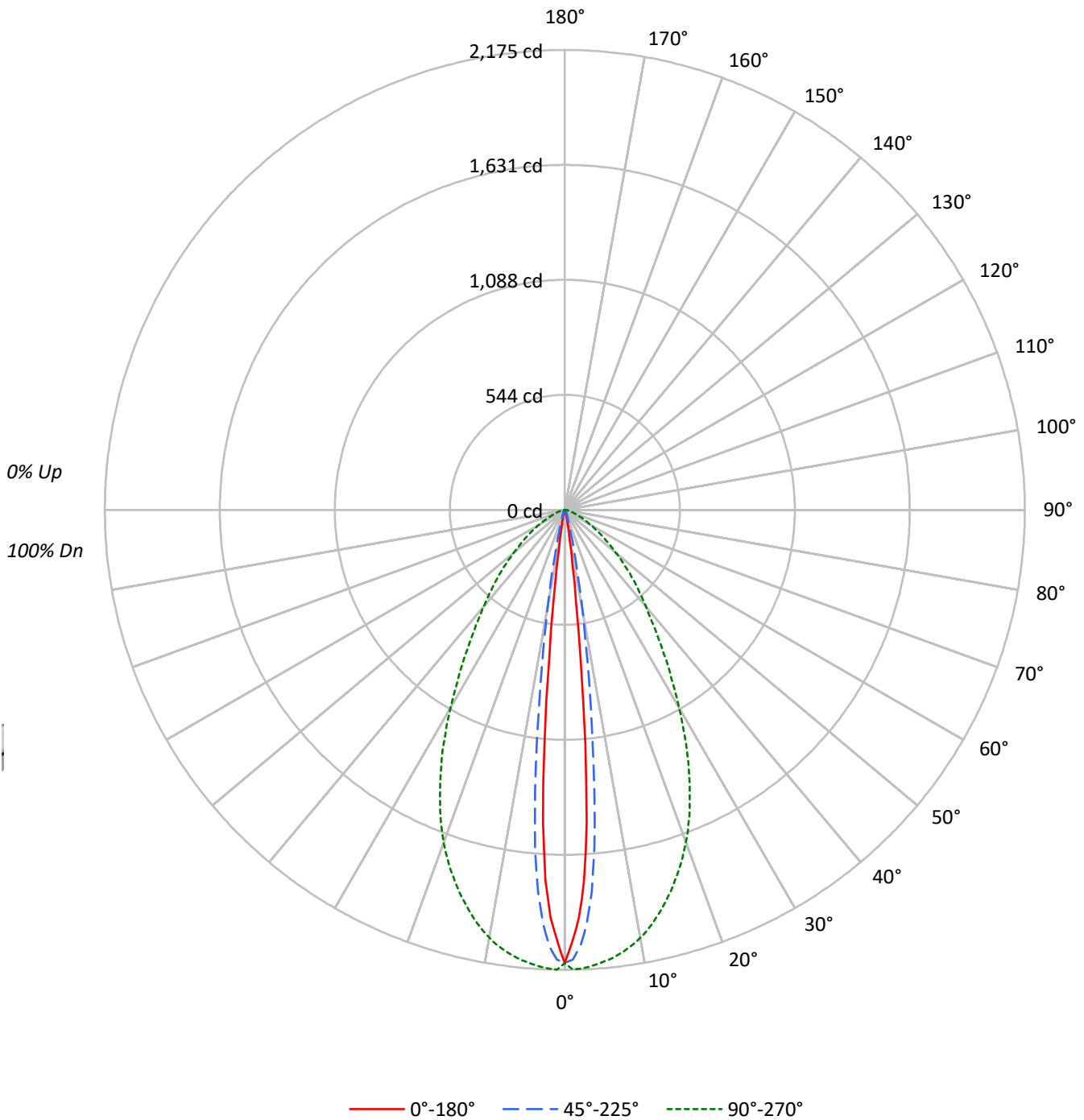
Input Watts (W): 18
Input Voltage (V): 120
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 24 FT



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Luminous Intensity Polar Plot





TEST NUMBER: P958855

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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° | 83705 | 83705 | 83705 |
| 5° | 43363 | 58584 | 75842 |
| 10° | 4315 | 16182 | 66918 |
| 15° | 1134 | 3180 | 57412 |
| 20° | 569 | 1102 | 47958 |
| 25° | 418 | 563 | 38031 |
| 30° | 419 | 372 | 28435 |
| 35° | 315 | 302 | 20478 |
| 40° | 270 | 277 | 14886 |
| 45° | 254 | 263 | 10980 |
| 50° | 249 | 242 | 7749 |
| 55° | 238 | 207 | 5345 |
| 60° | 226 | 166 | 3458 |
| 65° | 283 | 133 | 2126 |
| 70° | 270 | 113 | 1225 |
| 75° | 280 | 91 | 634 |
| 80° | 321 | 78 | 300 |
| 85° | 468 | 72 | 109 |

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 90°
 Vertical Angle: 45°
 Luminance: 10980 cd/sqm



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ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10° | 123.8 | 20.4 |
| 10°-20° | 138.5 | 22.9 |
| 20°-30° | 115.7 | 19.1 |
| 30°-40° | 86.6 | 14.3 |
| 40°-50° | 65.2 | 10.8 |
| 50°-60° | 43.4 | 7.2 |
| 60°-70° | 21.8 | 3.6 |
| 70°-80° | 8.0 | 1.3 |
| 80°-90° | 2.6 | 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° | 377.9 | 62.4 |
| 0°-40° | 464.6 | 76.7 |
| 0°-60° | 573.2 | 94.6 |
| 0°-90° | 605.6 | 100.0 |
| 90°-120° | 0.0 | 0.0 |
| 90°-150° | 0.0 | 0.0 |
| 90°-180° | 0.0 | 0.0 |
| 0°-180° | 605.6 | 100.0 |

CANDELA DISTRIBUTION:

| | 0° | 22.5° | 45° | 67.5° | 90° | Flux |
|-----|------|-------|------|-------|------|------|
| 0° | 2143 | 2143 | 2143 | 2143 | 2143 | |
| 5° | 1108 | 1224 | 1611 | 2004 | 2144 | 66 |
| 15° | 28 | 35 | 97 | 830 | 1891 | 9 |
| 25° | 10 | 11 | 18 | 272 | 1392 | 5 |
| 35° | 7 | 9 | 10 | 124 | 802 | 4 |
| 45° | 5 | 6 | 9 | 98 | 445 | 4 |
| 55° | 4 | 4 | 7 | 73 | 217 | 3 |
| 65° | 3 | 3 | 4 | 36 | 84 | 3 |
| 75° | 2 | 2 | 3 | 11 | 24 | 2 |
| 85° | 1 | 1 | 2 | 4 | 4 | 1 |
| 90° | 2 | 2 | 2 | 2 | 2 | |



TEST NUMBER: P958855

CATALOG NUMBER: MMG-05W-940-10x60-ID-X-X-4F-4-UNV-STD-X

CANDELA DISTRIBUTION (FULL):

| | 0° | 22.5° | 45° | 67.5° | 90° |
|-----|--------|--------|--------|--------|--------|
| 0° | 2143.2 | 2143.2 | 2143.2 | 2143.2 | 2143.2 |
| 1° | 2040.4 | 2084.4 | 2127.2 | 2159.2 | 2175.1 |
| 2° | 1929.8 | 1975.6 | 2066.8 | 2144.8 | 2170.9 |
| 3° | 1752.9 | 1813.6 | 1963.6 | 2110.0 | 2164.5 |
| 4° | 1480.0 | 1557.3 | 1813.6 | 2061.2 | 2154.7 |
| 5° | 1108.1 | 1223.5 | 1610.7 | 2004.3 | 2144.0 |
| 6° | 709.7 | 850.8 | 1339.2 | 1935.7 | 2132.2 |
| 7° | 433.0 | 571.2 | 1069.4 | 1848.1 | 2116.3 |
| 8° | 261.2 | 375.5 | 820.2 | 1751.1 | 2099.5 |
| 9° | 163.5 | 234.8 | 624.5 | 1630.8 | 2079.8 |
| 10° | 109.2 | 149.5 | 472.1 | 1478.9 | 2055.7 |
| 11° | 77.3 | 104.8 | 338.9 | 1353.1 | 2027.9 |
| 12° | 57.8 | 76.0 | 249.2 | 1215.6 | 1997.5 |
| 13° | 43.2 | 55.9 | 175.5 | 1059.1 | 1963.9 |
| 14° | 34.7 | 43.5 | 124.5 | 947.5 | 1928.8 |
| 15° | 28.2 | 35.1 | 97.4 | 829.9 | 1890.9 |
| 16° | 23.2 | 29.5 | 75.4 | 750.3 | 1852.1 |
| 17° | 19.3 | 24.5 | 59.1 | 662.2 | 1810.3 |
| 18° | 16.9 | 20.4 | 48.5 | 594.8 | 1768.2 |
| 19° | 14.9 | 18.1 | 40.6 | 524.8 | 1722.1 |
| 20° | 13.8 | 15.7 | 35.1 | 474.3 | 1673.8 |
| 21° | 12.5 | 14.4 | 30.1 | 423.7 | 1623.6 |
| 22° | 11.6 | 13.2 | 26.9 | 372.6 | 1569.9 |
| 23° | 10.9 | 12.1 | 23.2 | 338.5 | 1510.7 |
| 24° | 10.3 | 11.6 | 20.3 | 302.0 | 1451.0 |
| 25° | 9.8 | 10.8 | 18.5 | 272.4 | 1392.0 |
| 26° | 9.4 | 10.3 | 17.0 | 245.3 | 1332.4 |
| 27° | 9.2 | 9.8 | 15.6 | 223.2 | 1270.1 |
| 28° | 9.2 | 9.5 | 14.4 | 202.8 | 1206.0 |
| 29° | 9.2 | 9.0 | 13.4 | 184.1 | 1143.4 |
| 30° | 9.4 | 9.0 | 12.5 | 168.8 | 1081.2 |
| 31° | 9.0 | 9.0 | 12.1 | 157.4 | 1019.5 |
| 32° | 8.7 | 9.0 | 11.5 | 146.5 | 961.1 |
| 33° | 8.0 | 9.0 | 11.1 | 137.1 | 907.6 |
| 34° | 7.3 | 9.0 | 10.7 | 129.7 | 854.6 |
| 35° | 6.7 | 8.7 | 10.3 | 123.6 | 801.8 |
| 36° | 6.3 | 8.3 | 10.0 | 118.0 | 752.7 |
| 37° | 6.1 | 7.6 | 9.9 | 115.0 | 710.2 |
| 38° | 5.8 | 7.1 | 9.8 | 111.3 | 669.8 |
| 39° | 5.5 | 6.7 | 9.6 | 108.8 | 629.9 |
| 40° | 5.4 | 6.5 | 9.5 | 106.5 | 595.3 |
| 41° | 5.3 | 6.2 | 9.5 | 104.3 | 563.2 |
| 42° | 5.1 | 5.9 | 9.2 | 102.9 | 530.9 |
| 43° | 5.0 | 5.8 | 9.2 | 101.3 | 501.9 |
| 44° | 4.9 | 5.7 | 9.2 | 99.8 | 474.3 |



TEST NUMBER: P958855

CATALOG NUMBER: MMG-05W-940-10x60-ID-X-X-4F-4-UNV-STD-X

CANDELA DISTRIBUTION (continued):

| | 0° | 22.5° | 45° | 67.5° | 90° |
|-----|-----|-------|-----|-------|-------|
| 45° | 4.7 | 5.5 | 9.0 | 98.4 | 444.9 |
| 46° | 4.6 | 5.3 | 9.0 | 96.8 | 416.4 |
| 47° | 4.5 | 5.1 | 8.7 | 95.5 | 389.0 |
| 48° | 4.5 | 5.0 | 8.4 | 93.2 | 363.4 |
| 49° | 4.4 | 4.7 | 8.3 | 91.5 | 338.1 |
| 50° | 4.2 | 4.7 | 8.2 | 89.4 | 315.7 |
| 51° | 4.2 | 4.5 | 7.9 | 86.8 | 292.9 |
| 52° | 4.0 | 4.5 | 7.6 | 83.6 | 271.5 |
| 53° | 3.8 | 4.4 | 7.4 | 80.3 | 251.5 |
| 54° | 3.7 | 4.2 | 7.1 | 77.0 | 233.7 |
| 55° | 3.6 | 4.0 | 6.9 | 73.0 | 217.3 |
| 56° | 3.4 | 4.0 | 6.6 | 69.4 | 198.8 |
| 57° | 3.2 | 3.7 | 6.3 | 65.5 | 181.2 |
| 58° | 3.2 | 3.6 | 5.9 | 61.4 | 166.4 |
| 59° | 3.0 | 3.4 | 5.8 | 57.5 | 152.8 |
| 60° | 3.0 | 3.3 | 5.4 | 53.5 | 139.2 |
| 61° | 3.0 | 3.2 | 5.1 | 49.8 | 126.8 |
| 62° | 2.9 | 3.0 | 4.9 | 45.9 | 114.8 |
| 63° | 3.0 | 3.0 | 4.7 | 42.5 | 103.8 |
| 64° | 3.0 | 2.9 | 4.5 | 39.0 | 93.5 |
| 65° | 3.2 | 2.9 | 4.2 | 35.5 | 84.1 |
| 66° | 3.0 | 2.9 | 4.1 | 32.2 | 75.6 |
| 67° | 2.9 | 2.9 | 3.8 | 29.1 | 67.5 |
| 68° | 2.8 | 2.8 | 3.7 | 26.1 | 60.1 |
| 69° | 2.5 | 2.6 | 3.4 | 23.5 | 53.4 |
| 70° | 2.5 | 2.5 | 3.4 | 20.8 | 47.2 |
| 71° | 2.4 | 2.4 | 3.2 | 18.5 | 41.8 |
| 72° | 2.2 | 2.4 | 3.2 | 16.4 | 36.5 |
| 73° | 2.1 | 2.2 | 2.9 | 14.5 | 31.6 |
| 74° | 2.1 | 2.1 | 2.9 | 12.7 | 27.3 |
| 75° | 2.0 | 2.1 | 2.6 | 11.1 | 23.6 |
| 76° | 1.8 | 2.0 | 2.6 | 9.8 | 20.3 |
| 77° | 1.7 | 1.7 | 2.5 | 8.4 | 17.4 |
| 78° | 1.7 | 1.7 | 2.4 | 7.4 | 14.8 |
| 79° | 1.6 | 1.6 | 2.4 | 6.3 | 12.7 |
| 80° | 1.6 | 1.6 | 2.1 | 5.7 | 10.7 |
| 81° | 1.5 | 1.5 | 2.1 | 5.0 | 8.8 |
| 82° | 1.3 | 1.3 | 2.1 | 4.5 | 7.3 |
| 83° | 1.3 | 1.3 | 1.8 | 4.1 | 5.9 |
| 84° | 1.3 | 1.3 | 1.8 | 3.8 | 4.7 |
| 85° | 1.3 | 1.2 | 1.8 | 3.6 | 3.7 |
| 86° | 1.2 | 1.2 | 1.8 | 3.4 | 2.9 |
| 87° | 1.2 | 1.1 | 1.8 | 3.2 | 2.4 |
| 88° | 1.1 | 1.1 | 1.7 | 2.9 | 1.8 |
| 89° | 1.1 | 1.1 | 1.7 | 2.8 | 1.7 |



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CATALOG NUMBER: MMG-05W-940-10x60-ID-X-X-4F-4-UNV-STD-X

CANDELA DISTRIBUTION (continued):

| | 0° | 22.5° | 45° | 67.5° | 90° |
|-----|-----|-------|-----|-------|-----|
| 90° | 1.6 | 1.6 | 1.6 | 1.6 | 1.6 |

(END OF REPORT)