

LM-79-08 Approved Method: Electrical and Photometric Measurements of Solid-State  
Lighting Products

Test Report Prepared for

Cooper Lighting Solutions

(formerly Eaton)

Brand: HALO

Report Number: P990988

Luminaire Tested: **ML4ALSFLD2W1E-TIR4D40FL-TL4SDSL-600LM-2700K**

Issue Date: 5/13/2025

Tested By:

Approved By:



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**Test Information**

Test Method: LM-79-08  
 Report Number: P990988  
 Test Lab: Cooper Lighting Solutions  
 Issue Date: 5/13/2025  
 Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
 Product Line: HALO  
 Catalog Number: ML4ALSFLD2W1E-TIR4D40FL-TL4SDSL-600LM-2700K  
 Description: 4IN SQUARE ML FLEX ADJUSTABLE, SELECTABLE CCT, WITH 40D TIR,  
 METALLIC SILVER TRIM  
 Light Source: (1) D2W LED 90CRI / 2700K CCT  
 Ballast/Driver: -

**Summary**

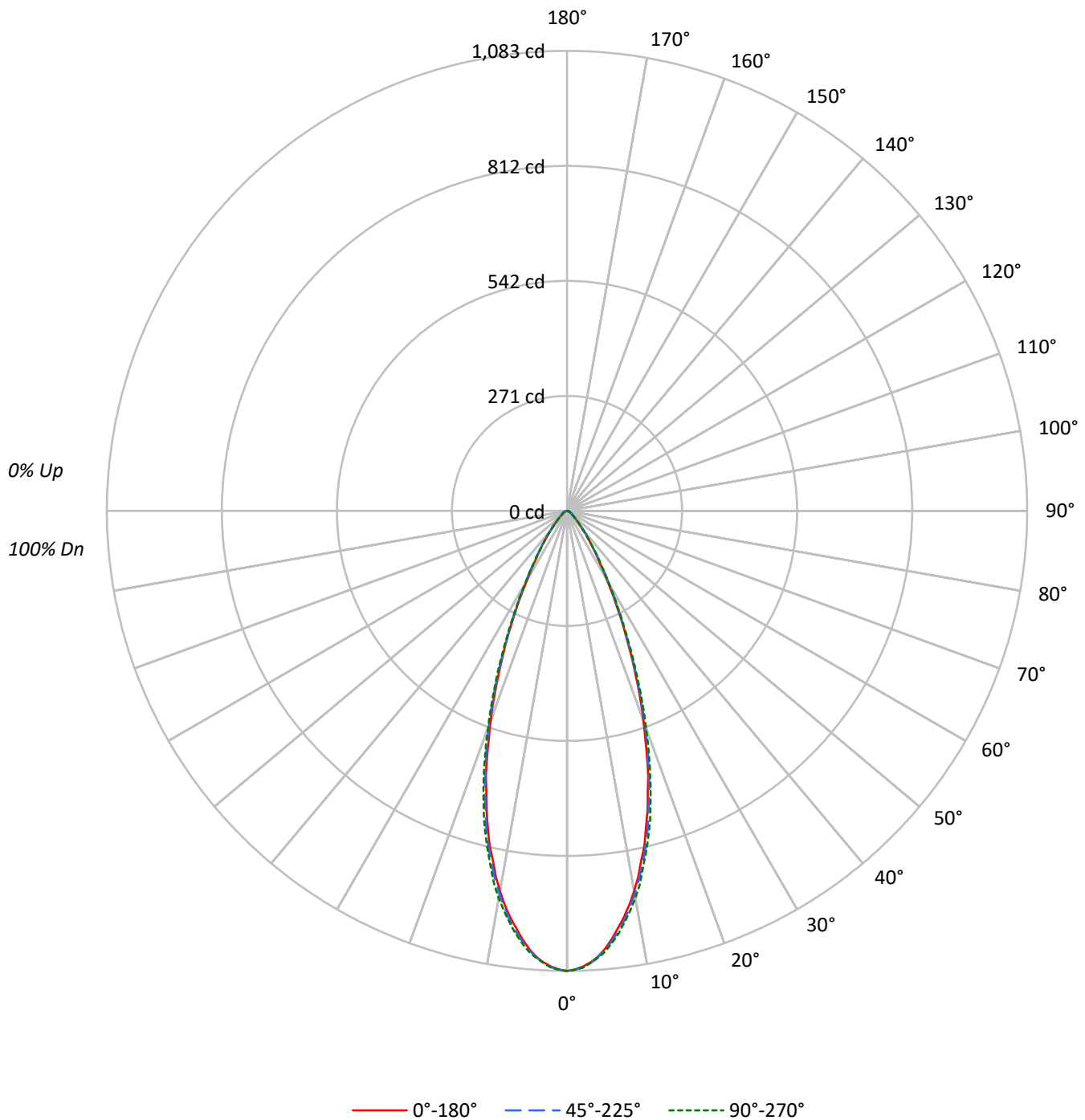
Lumens per Lamp: N/A  
 Luminaire Lumens: 581.0 lumens  
 Efficiency: N/A  
 Efficacy: 70.0 lumens/watt  
 Spacing Criteria (0/90/45): 0.64 / 0.65 / 0.64  
 Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')  
 CIE Type: Direct

Input Watts (W): 8.3  
 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

| Measurement and Test Equipment |                       |                  |                      |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument                     | Identification Number | Calibration Date | Calibration Due Date |
| Photometer                     | GONIO 1 IN0055        | 4/22/2021        | 10/22/2021           |
| Power Meter                    | XITRON 2801 IN0197    | 12/1/2020        | 12/1/2021            |
| AC Power Source                | CHROMA 61505 IN0196   | 12/1/2020        | 12/1/2021            |
| DC Power Supply                | AGILENT E3634A IN0198 | 11/30/2020       | 11/30/2021           |
| Room Thermometer               | ONSET IN0143          | 12/1/2020        | 12/1/2021            |

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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  |
| RW  | 70  | 50  | 30  | 10  | 70  | 50  | 30  | 10  | 50  | 30  | 10  |  | 50  | 30  | 10  |  | 50  |
| RCR |     |     |     |     |     |     |     |     |     |     |     |  |     |     |     |  |     |
| 0   | 119 | 119 | 119 | 119 | 116 | 116 | 116 | 116 | 111 | 111 | 111 |  | 106 | 106 | 106 |  | 102 |
| 1   | 114 | 111 | 109 | 106 | 111 | 109 | 107 | 105 | 105 | 103 | 101 |  | 101 | 100 | 98  |  | 98  |
| 2   | 108 | 104 | 100 | 96  | 106 | 102 | 98  | 95  | 99  | 96  | 93  |  | 96  | 93  | 91  |  | 93  |
| 3   | 103 | 97  | 92  | 89  | 101 | 96  | 91  | 88  | 93  | 89  | 86  |  | 91  | 88  | 85  |  | 89  |
| 4   | 99  | 91  | 86  | 82  | 97  | 90  | 85  | 82  | 88  | 84  | 81  |  | 86  | 83  | 80  |  | 84  |
| 5   | 94  | 86  | 81  | 77  | 92  | 85  | 80  | 76  | 84  | 79  | 76  |  | 82  | 78  | 75  |  | 80  |
| 6   | 90  | 82  | 76  | 72  | 89  | 81  | 76  | 72  | 79  | 75  | 71  |  | 78  | 74  | 71  |  | 77  |
| 7   | 86  | 77  | 72  | 68  | 85  | 77  | 71  | 68  | 76  | 71  | 67  |  | 74  | 70  | 67  |  | 73  |
| 8   | 82  | 74  | 68  | 64  | 81  | 73  | 68  | 64  | 72  | 67  | 64  |  | 71  | 67  | 64  |  | 70  |
| 9   | 79  | 70  | 65  | 61  | 78  | 70  | 64  | 61  | 69  | 64  | 61  |  | 68  | 64  | 61  |  | 67  |
| 10  | 76  | 67  | 62  | 58  | 75  | 67  | 61  | 58  | 66  | 61  | 58  |  | 65  | 61  | 58  |  | 64  |

**AVERAGE LUMINANCE (cd/sqm):**

|     | 0°     | 45°    | 90°    |
|-----|--------|--------|--------|
| 0°  | 104935 | 104935 | 104935 |
| 5°  | 100542 | 100766 | 101213 |
| 10° | 89428  | 90117  | 91091  |
| 15° | 73314  | 74126  | 75641  |
| 20° | 54186  | 55206  | 56041  |
| 25° | 35723  | 36279  | 36963  |
| 30° | 21097  | 21936  | 22070  |
| 35° | 12630  | 12973  | 13033  |
| 40° | 7562   | 7929   | 7562   |
| 45° | 4768   | 5014   | 4685   |
| 50° | 3059   | 3406   | 3150   |
| 55° | 2246   | 2652   | 2348   |
| 60° | 1918   | 2248   | 2015   |
| 65° | 1857   | 2132   | 1994   |
| 70° | 1643   | 1983   | 1643   |
| 75° | 1085   | 1722   | 1085   |
| 80° | 335    | 669    | 335    |
| 85° | 0      | 0      | 0      |

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 95.1   | 16.4      |
| 10°-20°   | 202.9  | 34.9      |
| 20°-30°   | 157.0  | 27.0      |
| 30°-40°   | 71.2   | 12.3      |
| 40°-50°   | 28.8   | 5.0       |
| 50°-60°   | 13.6   | 2.3       |
| 60°-70°   | 8.6    | 1.5       |
| 70°-80°   | 3.8    | 0.7       |
| 80°-90°   | 0.1    | 0.0       |
| 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°    | 454.9  | 78.3      |
| 0°-40°    | 526.1  | 90.6      |
| 0°-60°    | 568.5  | 97.8      |
| 0°-90°    | 581.0  | 100.0     |
| 90°-120°  | 0.0    | 0.0       |
| 90°-150°  | 0.0    | 0.0       |
| 90°-180°  | 0.0    | 0.0       |
| 0°-180°   | 581.0  | 100.0     |

**CANDELA DISTRIBUTION:**

|     | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|-----|------|-------|------|-------|------|------|
| 0°  | 1083 | 1083  | 1083 | 1083  | 1083 |      |
| 5°  | 1034 | 1036  | 1036 | 1039  | 1041 | 95   |
| 15° | 731  | 734   | 739  | 750   | 754  | 200  |
| 25° | 334  | 336   | 339  | 341   | 346  | 154  |
| 35° | 107  | 107   | 110  | 110   | 110  | 69   |
| 45° | 35   | 35    | 37   | 35    | 34   | 28   |
| 55° | 13   | 14    | 16   | 14    | 14   | 13   |
| 65° | 8    | 8     | 9    | 9     | 9    | 8    |
| 75° | 3    | 4     | 5    | 4     | 3    | 3    |
| 85° | 0    | 0     | 0    | 0     | 0    | 0    |
| 90° | 0    | 0     | 0    | 0     | 0    |      |

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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|-------|--------|--------|--------|--------|--------|
| 0°    | 1083.2 | 1083.2 | 1083.2 | 1083.2 | 1083.2 |
| 1°    | 1079.7 | 1080.3 | 1080.3 | 1080.9 | 1080.3 |
| 2°    | 1073.3 | 1075.1 | 1075.1 | 1075.7 | 1076.2 |
| 3°    | 1064.0 | 1065.2 | 1065.8 | 1067.5 | 1065.8 |
| 4°    | 1051.3 | 1051.9 | 1052.4 | 1054.8 | 1054.2 |
| 5°    | 1033.9 | 1036.2 | 1036.2 | 1039.1 | 1040.8 |
| 6°    | 1012.4 | 1017.6 | 1017.6 | 1021.7 | 1021.7 |
| 7°    | 988.6  | 993.3  | 996.2  | 999.1  | 1001.4 |
| 8°    | 964.8  | 969.5  | 972.4  | 974.1  | 976.4  |
| 9°    | 938.1  | 940.5  | 943.9  | 949.2  | 952.1  |
| 10°   | 909.1  | 912.0  | 916.1  | 921.3  | 926.0  |
| 11°   | 877.2  | 881.3  | 885.4  | 890.6  | 896.4  |
| 12°   | 840.1  | 846.5  | 851.7  | 859.8  | 859.8  |
| 13°   | 809.3  | 809.3  | 817.5  | 825.0  | 825.6  |
| 14°   | 768.7  | 772.8  | 781.5  | 786.7  | 790.8  |
| 15°   | 731.0  | 733.9  | 739.1  | 750.2  | 754.2  |
| 16°   | 688.7  | 694.5  | 702.0  | 711.9  | 713.0  |
| 17°   | 653.3  | 655.6  | 660.2  | 668.4  | 671.8  |
| 18°   | 609.2  | 612.1  | 618.5  | 626.6  | 630.1  |
| 19°   | 565.1  | 570.3  | 577.3  | 584.2  | 587.1  |
| 20°   | 525.6  | 532.0  | 535.5  | 540.7  | 543.6  |
| 22.5° | 425.3  | 428.8  | 432.2  | 438.6  | 440.9  |
| 25°   | 334.2  | 336.5  | 339.4  | 340.6  | 345.8  |
| 27.5° | 254.7  | 255.3  | 259.9  | 262.8  | 262.8  |
| 30°   | 188.6  | 192.6  | 196.1  | 196.7  | 197.3  |
| 32.5° | 140.4  | 143.9  | 145.6  | 147.9  | 146.2  |
| 35°   | 106.8  | 107.3  | 109.7  | 110.2  | 110.2  |
| 37.5° | 80.1   | 80.1   | 83.5   | 83.0   | 81.2   |
| 40°   | 59.8   | 60.3   | 62.7   | 62.1   | 59.8   |
| 42.5° | 45.3   | 45.8   | 47.6   | 46.4   | 45.3   |
| 45°   | 34.8   | 35.4   | 36.6   | 35.4   | 34.2   |
| 47.5° | 26.7   | 27.3   | 28.4   | 27.8   | 26.1   |
| 50°   | 20.3   | 21.5   | 22.6   | 22.0   | 20.9   |
| 52.5° | 16.2   | 17.4   | 18.6   | 17.4   | 16.8   |
| 55°   | 13.3   | 14.5   | 15.7   | 14.5   | 13.9   |
| 57.5° | 11.6   | 12.2   | 13.3   | 12.8   | 12.2   |
| 60°   | 9.9    | 10.4   | 11.6   | 11.0   | 10.4   |
| 62.5° | 8.7    | 9.3    | 10.4   | 9.9    | 9.3    |
| 65°   | 8.1    | 8.1    | 9.3    | 8.7    | 8.7    |
| 67.5° | 7.0    | 7.5    | 8.1    | 8.1    | 7.5    |
| 70°   | 5.8    | 6.4    | 7.0    | 7.0    | 5.8    |
| 72.5° | 4.6    | 5.2    | 5.8    | 5.2    | 4.6    |
| 75°   | 2.9    | 3.5    | 4.6    | 3.5    | 2.9    |
| 77.5° | 1.2    | 1.7    | 2.9    | 2.3    | 1.7    |
| 80°   | 0.6    | 0.6    | 1.2    | 0.6    | 0.6    |

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**CANDELA DISTRIBUTION (continued):**

|       | 0°  | 22.5° | 45° | 67.5° | 90° |
|-------|-----|-------|-----|-------|-----|
| 82.5° | 0.0 | 0.0   | 0.0 | 0.0   | 0.0 |
| 85°   | 0.0 | 0.0   | 0.0 | 0.0   | 0.0 |
| 87.5° | 0.0 | 0.0   | 0.0 | 0.0   | 0.0 |
| 90°   | 0.0 | 0.0   | 0.0 | 0.0   | 0.0 |

(END OF REPORT)