

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: P990810

Luminaire Tested: **ML3ALSFL9FS1E-TIR4D55WFL-TL3SDSL-750LM-4000K**

Issue Date: 5/13/2025

Tested By:

Approved By:



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**Test Information**

Test Method: LM-79-08  
 Report Number: P990810  
 Test Lab: Cooper Lighting Solutions  
 Issue Date: 5/13/2025  
 Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
 Product Line: HALO  
 Catalog Number: ML3ALSFL9FS1E-TIR4D55WFL-TL3SDSL-750LM-4000K  
 Description: 3IN SQUARE ML FLEX ADJUSTABLE, SELECTABLE CCT, WITH 55D TIR,  
 METALLIC SILVER TRIM  
 Light Source: (1) STANDARD SELECTABLE LUMEN LED 90CRI / 4000K CCT  
 Ballast/Driver: -

**Summary**

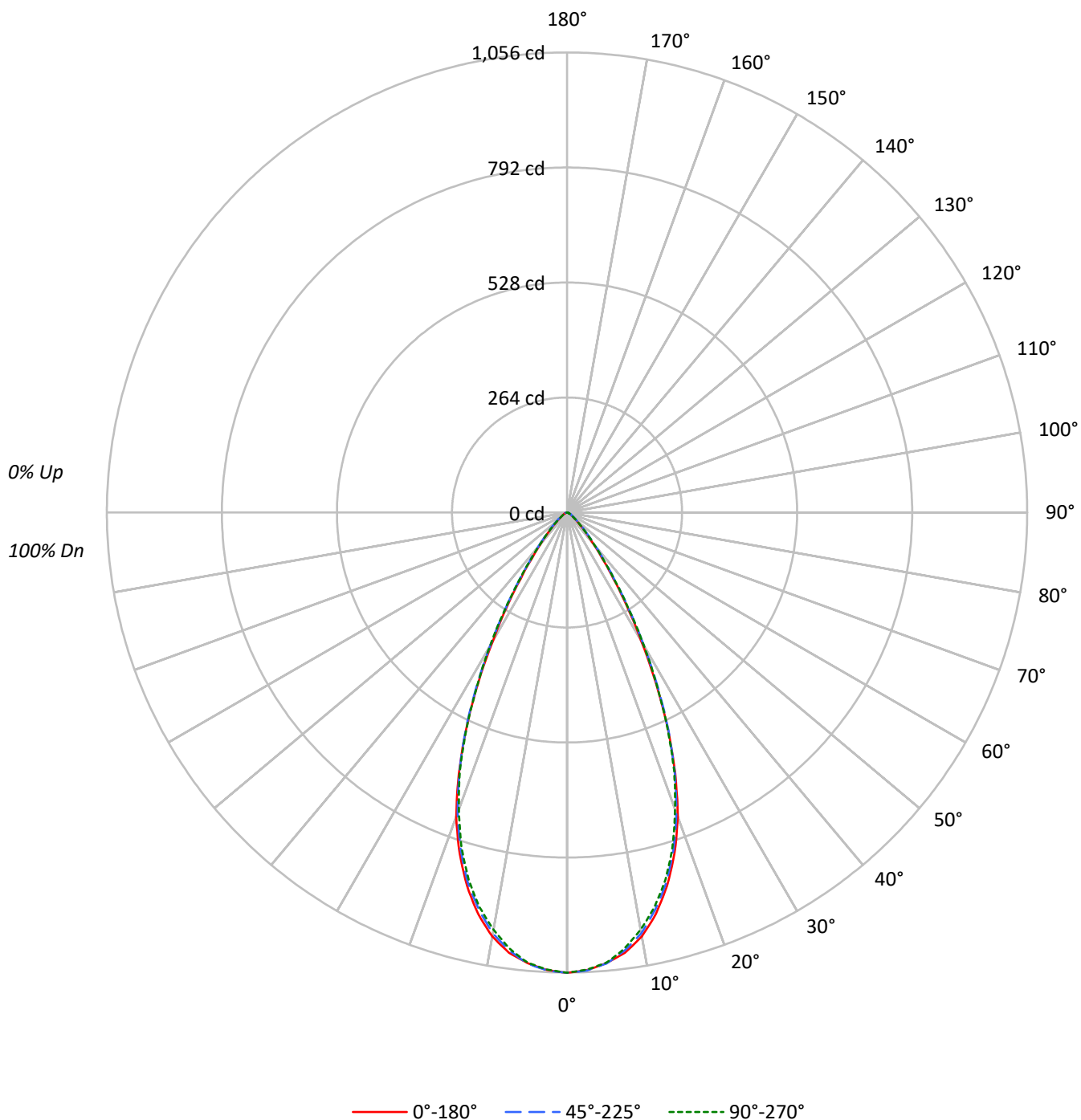
Lumens per Lamp: N/A  
 Luminaire Lumens: 781.8 lumens  
 Efficiency: N/A  
 Efficacy: 80.6 lumens/watt  
 Spacing Criteria (0/90/45): 0.81 / 0.8 / 0.78  
 Luminous Opening: Rectangular (W 0.25' x L: 0.25' x H: 0')  
 CIE Type: Direct

Input Watts (W): 9.7  
 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



TEST NUMBER: P990810

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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 | 108 | 106 | 111 | 109 | 106 | 104 | 105 | 103 | 101 |  | 101 | 100 | 98  |  | 97  |
| 2   | 108 | 103 | 99  | 96  | 106 | 102 | 98  | 95  | 98  | 95  | 93  |  | 95  | 93  | 91  |  | 93  |
| 3   | 103 | 96  | 92  | 88  | 101 | 95  | 91  | 87  | 92  | 89  | 86  |  | 90  | 87  | 84  |  | 88  |
| 4   | 98  | 90  | 85  | 81  | 96  | 89  | 84  | 80  | 87  | 83  | 79  |  | 85  | 81  | 78  |  | 83  |
| 5   | 93  | 85  | 79  | 75  | 91  | 84  | 79  | 75  | 82  | 77  | 74  |  | 80  | 76  | 73  |  | 79  |
| 6   | 89  | 80  | 74  | 70  | 87  | 79  | 74  | 70  | 78  | 73  | 69  |  | 76  | 72  | 69  |  | 75  |
| 7   | 84  | 75  | 70  | 65  | 83  | 75  | 69  | 65  | 73  | 69  | 65  |  | 72  | 68  | 65  |  | 71  |
| 8   | 81  | 71  | 65  | 62  | 79  | 71  | 65  | 61  | 70  | 65  | 61  |  | 69  | 64  | 61  |  | 68  |
| 9   | 77  | 68  | 62  | 58  | 76  | 67  | 62  | 58  | 66  | 61  | 58  |  | 65  | 61  | 57  |  | 64  |
| 10  | 74  | 64  | 59  | 55  | 73  | 64  | 58  | 55  | 63  | 58  | 55  |  | 62  | 58  | 54  |  | 61  |

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

|     | 0°     | 45°    | 90°    |
|-----|--------|--------|--------|
| 0°  | 181953 | 181953 | 181953 |
| 5°  | 179519 | 179692 | 179329 |
| 10° | 172833 | 171539 | 170035 |
| 15° | 158168 | 156849 | 155512 |
| 20° | 136247 | 134488 | 132930 |
| 25° | 104021 | 104420 | 103413 |
| 30° | 67555  | 69901  | 70100  |
| 35° | 38958  | 40977  | 40745  |
| 40° | 21313  | 22977  | 22257  |
| 45° | 11934  | 13493  | 12202  |
| 50° | 6859   | 8574   | 7127   |
| 55° | 4474   | 5435   | 4474   |
| 60° | 3307   | 4030   | 3307   |
| 65° | 2608   | 3464   | 3056   |
| 70° | 2165   | 2669   | 2165   |
| 75° | 1397   | 2129   | 1397   |
| 80° | 0      | 0      | 0      |
| 85° | 0      | 0      | 0      |

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 97.3   | 12.4      |
| 10°-20°   | 243.3  | 31.1      |
| 20°-30°   | 247.1  | 31.6      |
| 30°-40°   | 125.3  | 16.0      |
| 40°-50°   | 43.3   | 5.5       |
| 50°-60°   | 15.5   | 2.0       |
| 60°-70°   | 7.4    | 0.9       |
| 70°-80°   | 2.5    | 0.3       |
| 80°-90°   | 0.0    | 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°    | 587.7  | 75.2      |
| 0°-40°    | 713.0  | 91.2      |
| 0°-60°    | 771.9  | 98.7      |
| 0°-90°    | 781.8  | 100.0     |
| 90°-120°  | 0.0    | 0.0       |
| 90°-150°  | 0.0    | 0.0       |
| 90°-180°  | 0.0    | 0.0       |
| 0°-180°   | 781.8  | 100.0     |

**CANDELA DISTRIBUTION:**

|     | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|-----|------|-------|------|-------|------|------|
| 0°  | 1056 | 1056  | 1056 | 1056  | 1056 |      |
| 5°  | 1038 | 1039  | 1039 | 1036  | 1037 | 98   |
| 15° | 887  | 885   | 880  | 873   | 872  | 246  |
| 25° | 547  | 550   | 550  | 547   | 544  | 247  |
| 35° | 185  | 188   | 195  | 195   | 194  | 121  |
| 45° | 49   | 52    | 55   | 53    | 50   | 40   |
| 55° | 15   | 16    | 18   | 16    | 15   | 14   |
| 65° | 6    | 8     | 8    | 8     | 8    | 7    |
| 75° | 2    | 2     | 3    | 2     | 2    | 2    |
| 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°    | 1056.5 | 1056.5 | 1056.5 | 1056.5 | 1056.5 |
| 2.5°  | 1051.2 | 1051.2 | 1052.2 | 1050.1 | 1050.1 |
| 5°    | 1038.4 | 1039.4 | 1039.4 | 1036.2 | 1037.3 |
| 7.5°  | 1019.2 | 1017.1 | 1013.9 | 1010.7 | 1009.6 |
| 10°   | 988.3  | 986.2  | 980.9  | 976.6  | 972.3  |
| 12.5° | 943.6  | 941.5  | 934.0  | 928.7  | 927.6  |
| 15°   | 887.1  | 885.0  | 879.7  | 873.3  | 872.2  |
| 17.5° | 820.1  | 817.9  | 811.5  | 806.2  | 805.1  |
| 20°   | 743.4  | 738.0  | 733.8  | 729.5  | 725.3  |
| 22.5° | 648.6  | 645.4  | 645.4  | 643.3  | 642.2  |
| 25°   | 547.4  | 549.5  | 549.5  | 547.4  | 544.2  |
| 27.5° | 442.0  | 447.3  | 449.4  | 446.2  | 444.1  |
| 30°   | 339.7  | 348.3  | 351.5  | 352.5  | 352.5  |
| 32.5° | 256.7  | 257.7  | 265.2  | 265.2  | 266.3  |
| 35°   | 185.3  | 188.5  | 194.9  | 194.9  | 193.8  |
| 37.5° | 132.1  | 135.3  | 141.6  | 141.6  | 139.5  |
| 40°   | 94.8   | 96.9   | 102.2  | 102.2  | 99.0   |
| 42.5° | 68.2   | 70.3   | 74.6   | 73.5   | 71.4   |
| 45°   | 49.0   | 52.2   | 55.4   | 53.3   | 50.1   |
| 47.5° | 34.1   | 37.3   | 41.5   | 39.4   | 37.3   |
| 50°   | 25.6   | 27.7   | 32.0   | 28.8   | 26.6   |
| 52.5° | 19.2   | 20.2   | 23.4   | 21.3   | 19.2   |
| 55°   | 14.9   | 16.0   | 18.1   | 16.0   | 14.9   |
| 57.5° | 11.7   | 12.8   | 14.9   | 12.8   | 11.7   |
| 60°   | 9.6    | 10.7   | 11.7   | 10.7   | 9.6    |
| 62.5° | 8.5    | 8.5    | 9.6    | 8.5    | 8.5    |
| 65°   | 6.4    | 7.5    | 8.5    | 7.5    | 7.5    |
| 67.5° | 5.3    | 5.3    | 6.4    | 6.4    | 5.3    |
| 70°   | 4.3    | 4.3    | 5.3    | 5.3    | 4.3    |
| 72.5° | 3.2    | 3.2    | 4.3    | 3.2    | 3.2    |
| 75°   | 2.1    | 2.1    | 3.2    | 2.1    | 2.1    |
| 77.5° | 1.1    | 1.1    | 2.1    | 1.1    | 1.1    |
| 80°   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 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)