

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: P601348

Luminaire Tested: **ML4DM06FL9FS1E - TIR4D40FL - TL43R2G\_ TL44S2G\_ 4000K**

Issue Date: 7/29/2022

Tested By:

Approved By:



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**Test Information**

Test Method: LM-79-08  
 Report Number: P601348  
 Test Lab: COOPER LIGHTING SOLUTIONS  
 Issue Date: 7/29/2022  
 Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
 Product Line: HALO  
 Catalog Number: ML4DM06FL9FS1E - TIR4D40FL - TL43R2G\_ TL44S2G\_ 4000K  
 Description: DIRECT MOUNT, 40D OPTIC, DIFFUSE CLEAR LENS TRIM  
 Light Source: (1) SELECTABLE LUMEN LED 90CRI / 4000K CCT  
 Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
 Luminaire Lumens: 835.6 lumens  
 Efficiency: N/A  
 Efficacy: 100.7 lumens/watt  
 Spacing Criteria (0/90/45): 0.67 / 0.67 / 0.63  
 Luminous Opening: Circular (Dia: 0.21' x H: 0')  
 CIE Type: Direct

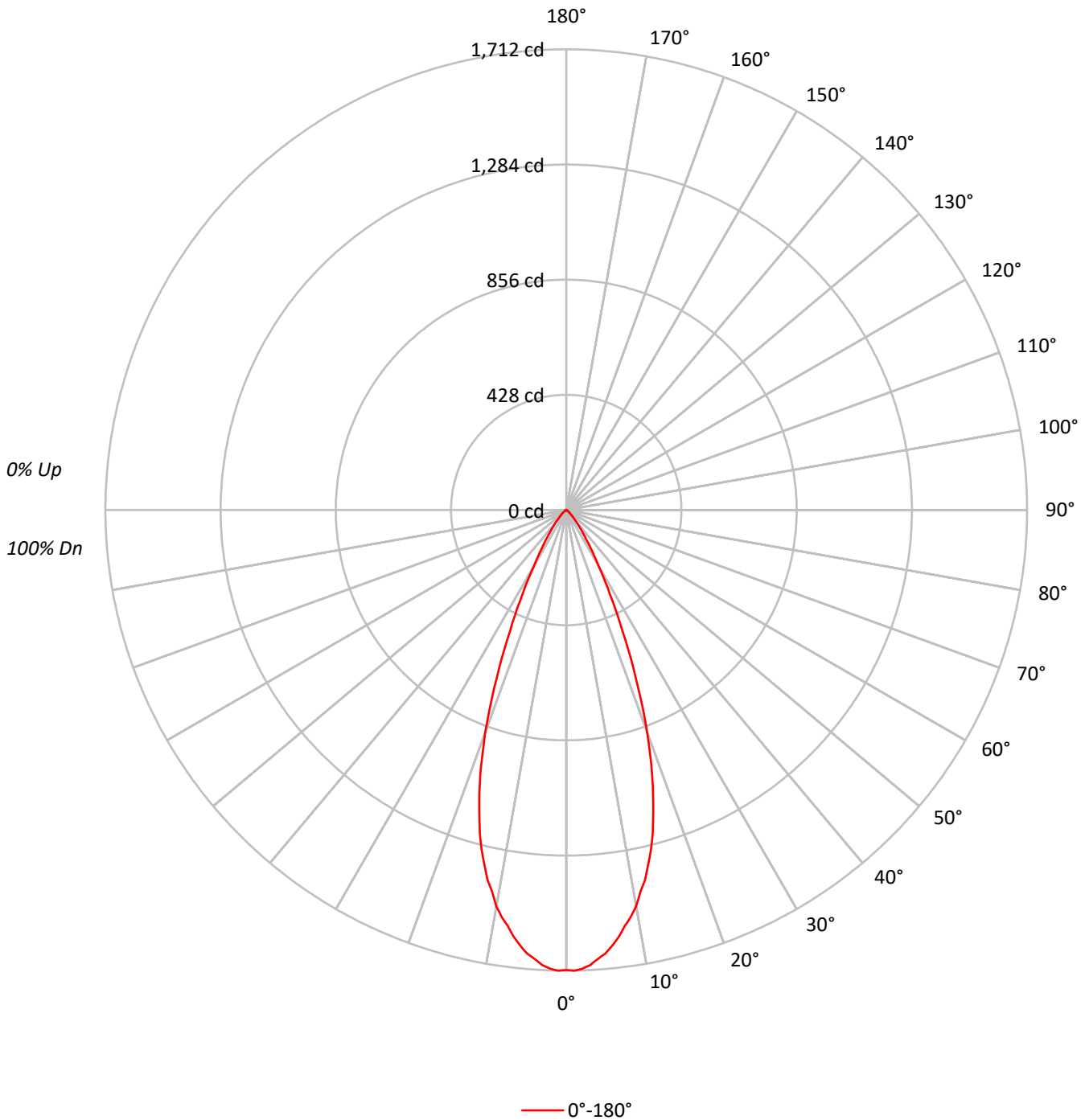
Input Watts (W): 8.3  
 Input Voltage (V): NR  
 Input Current (Ain): NR  
 Voltage Rise (V): NR  
 Power Factor: NR  
 Total Harmonic Distortion (THDi): NR  
 Frequency (hertz): 60  
 Stabilization Time: NR  
 Operation Time: NR  
 Ambient Temperature (°C): NR  
 Test Distance: 25 FT



| Meas             |                       | Calibration Due Date |            |
|------------------|-----------------------|----------------------|------------|
| Instrument       | Identificatio         |                      |            |
| Photometer       | GONIO 1 11111111      | 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  | 0   |
| RW  | 70  | 50  | 30  | 10  | 70  | 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   | 114 | 112 | 110 | 108 | 112 | 110 | 108 | 106 | 106 | 104 | 103 | 102 | 101 | 100 | 99  | 98  | 97  | 95  |
| 2   | 109 | 105 | 102 | 99  | 107 | 104 | 100 | 98  | 100 | 98  | 95  | 97  | 95  | 93  | 95  | 93  | 92  | 90  |
| 3   | 105 | 99  | 95  | 92  | 103 | 98  | 94  | 91  | 95  | 92  | 89  | 93  | 90  | 88  | 91  | 89  | 87  | 85  |
| 4   | 101 | 94  | 89  | 86  | 99  | 93  | 89  | 85  | 91  | 87  | 84  | 89  | 86  | 83  | 87  | 85  | 82  | 81  |
| 5   | 97  | 89  | 84  | 81  | 95  | 88  | 84  | 80  | 87  | 83  | 80  | 85  | 82  | 79  | 84  | 81  | 78  | 77  |
| 6   | 93  | 85  | 80  | 76  | 91  | 84  | 79  | 76  | 83  | 79  | 75  | 82  | 78  | 75  | 80  | 77  | 75  | 73  |
| 7   | 89  | 81  | 76  | 72  | 88  | 80  | 76  | 72  | 79  | 75  | 72  | 78  | 74  | 71  | 77  | 74  | 71  | 70  |
| 8   | 86  | 77  | 72  | 69  | 85  | 77  | 72  | 69  | 76  | 72  | 68  | 75  | 71  | 68  | 74  | 71  | 68  | 67  |
| 9   | 82  | 74  | 69  | 66  | 81  | 74  | 69  | 66  | 73  | 68  | 65  | 72  | 68  | 65  | 71  | 68  | 65  | 64  |
| 10  | 79  | 71  | 66  | 63  | 78  | 71  | 66  | 63  | 70  | 66  | 63  | 69  | 65  | 62  | 69  | 65  | 62  | 61  |

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

|     |        |
|-----|--------|
|     | 0°     |
| 0°  | 539674 |
| 5°  | 524651 |
| 10° | 479544 |
| 15° | 405655 |
| 20° | 295505 |
| 25° | 171243 |
| 30° | 87872  |
| 35° | 46026  |
| 40° | 24815  |
| 45° | 13218  |
| 50° | 7811   |
| 55° | 4074   |
| 60° | 2021   |
| 65° | 1569   |
| 70° | 1016   |
| 75° | 0      |
| 80° | 0      |
| 85° | 0      |

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 152.6  | 18.3      |
| 10°-20°   | 336.6  | 40.3      |
| 20°-30°   | 231.5  | 27.7      |
| 30°-40°   | 80.3   | 9.6       |
| 40°-50°   | 24.9   | 3.0       |
| 50°-60°   | 7.5    | 0.9       |
| 60°-70°   | 1.8    | 0.2       |
| 70°-80°   | 0.4    | 0.1       |
| 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°    | 720.7  | 86.2      |
| 0°-40°    | 801.0  | 95.9      |
| 0°-60°    | 833.4  | 99.7      |
| 0°-90°    | 835.6  | 100.0     |
| 90°-120°  | 0.0    | 0.0       |
| 90°-150°  | 0.0    | 0.0       |
| 90°-180°  | 0.0    | 0.0       |
| 0°-180°   | 835.6  | 100.0     |

**CANDELA DISTRIBUTION:**

|     | 0°   | Flux |
|-----|------|------|
| 0°  | 1709 |      |
| 5°  | 1655 | 153  |
| 15° | 1241 | 337  |
| 25° | 492  | 231  |
| 35° | 119  | 80   |
| 45° | 30   | 25   |
| 55° | 7    | 7    |
| 65° | 2    | 2    |
| 75° | 0    | 0    |
| 85° | 0    | 0    |
| 90° | 0    |      |

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**CANDELA DISTRIBUTION (FULL):**

| 0°    |        |
|-------|--------|
| 0°    | 1709.1 |
| 1°    | 1712.3 |
| 2°    | 1705.9 |
| 3°    | 1693.3 |
| 4°    | 1673.2 |
| 5°    | 1655.2 |
| 6°    | 1628.8 |
| 7°    | 1598.1 |
| 8°    | 1561.1 |
| 9°    | 1531.5 |
| 10°   | 1495.6 |
| 11°   | 1444.9 |
| 12°   | 1405.8 |
| 13°   | 1352.9 |
| 14°   | 1300.1 |
| 15°   | 1240.9 |
| 17.5° | 1069.6 |
| 20°   | 879.4  |
| 22.5° | 675.4  |
| 25°   | 491.5  |
| 27.5° | 348.8  |
| 30°   | 241.0  |
| 32.5° | 169.1  |
| 35°   | 119.4  |
| 37.5° | 85.6   |
| 40°   | 60.2   |
| 42.5° | 42.3   |
| 45°   | 29.6   |
| 47.5° | 21.1   |
| 50°   | 15.9   |
| 52.5° | 11.6   |
| 55°   | 7.4    |
| 57.5° | 5.3    |
| 60°   | 3.2    |
| 62.5° | 2.1    |
| 65°   | 2.1    |
| 67.5° | 1.1    |
| 70°   | 1.1    |
| 72.5° | 1.1    |
| 75°   | 0.0    |
| 77.5° | 0.0    |
| 80°   | 0.0    |
| 82.5° | 0.0    |
| 85°   | 0.0    |
| 87.5° | 0.0    |

Signify Classified - Internal  
Cooper Lighting Solutions Photometric Lab  
1121 Highway 74 South  
Peachtree City, GA 30269

  
NVLAP Lab Code: 200050-0



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CANDELA DISTRIBUTION (continued):



(END OF REPORT)