

LM-79-2019 Approved Method: Electrical and Photometric Measurements of Solid-State Lighting Products

Test Report Prepared for

Cooper Lighting Solutions

Brand: FAIL-SAFE

Report Number: P517913

Luminaire Tested: HVL8-2-LD4-1STD-50-UNV-O-EDD-90

Issue Date: 4/27/2021

Tested By:

Approved By:



NVLAP Lab Code: 200050-0

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**Test Information**

Test Method: LM-79-2019  
Report Number: P517913  
Test Lab: INNOVATION CENTER  
Issue Date: 4/27/2021  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: FAIL-SAFE  
Catalog Number: HVL8-2-LD4-1STD-50-UNV-O-EDD-90  
Description: 2 FOOT, 8 INCH WIDE, HVL LED LUMINAIRE, WITH 5000K, 90 CRI LEDS  
Light Source: -  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 1709.0 lumens  
Efficiency: N/A  
Efficacy: 104.8 lumens/watt  
Spacing Criteria (0/90/45): 1.25 / 1.27 / 1.38  
Luminous Opening: Rectangular w/ Sides (W: 0.67' x L: 2' x H: 0.17')  
CIE Type: Direct

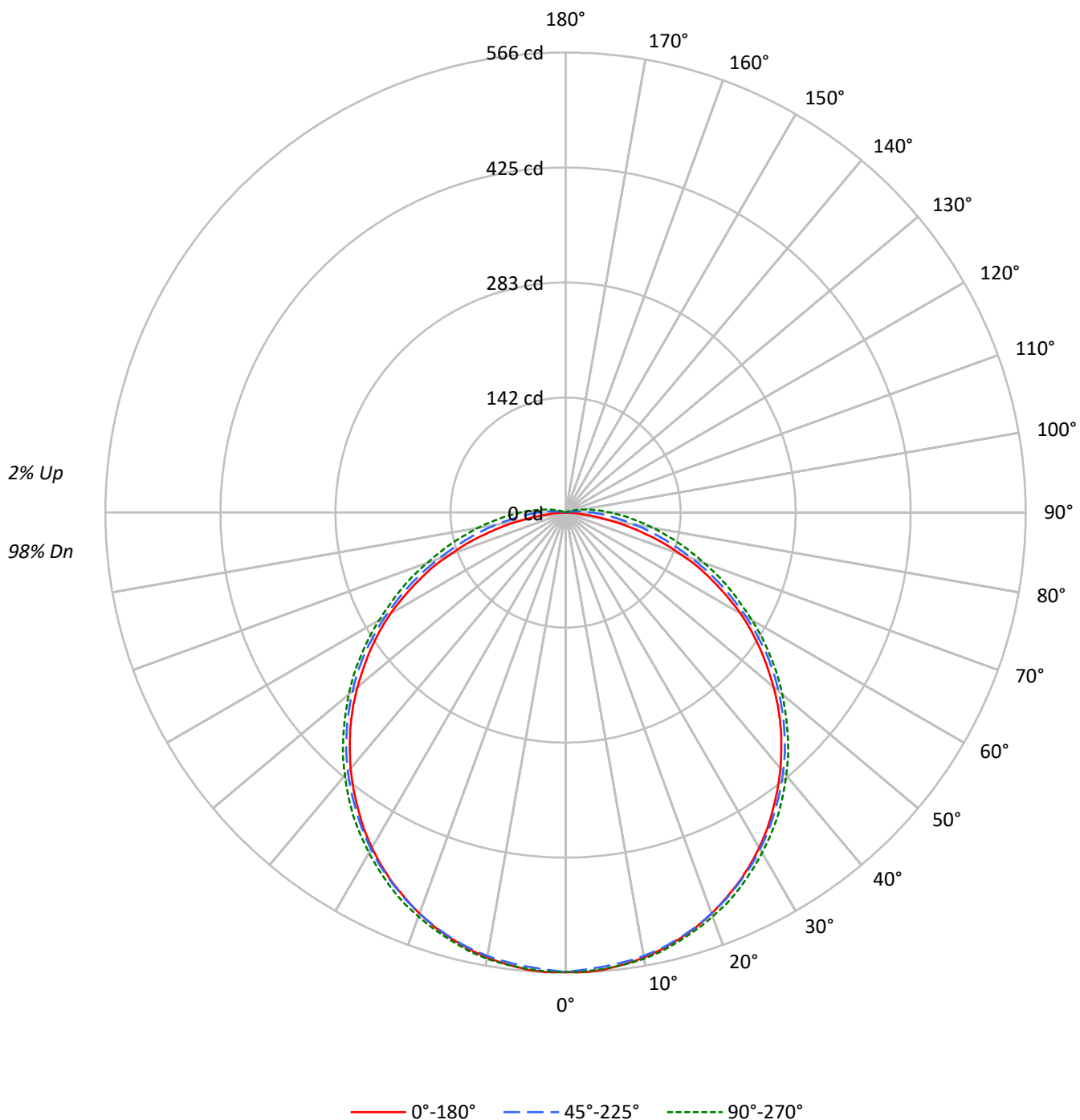
Input Watts (W): 16.3  
Input Voltage (V): NR  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT

| Measurement and Test Equipment |                       |                  |                      |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument                     | Identification Number | Calibration Date | Calibration Due Date |
| Photometer                     | P3                    | 10/30/2015       | 4/30/2016            |
| Power Meter                    | IN0214                | 1/12/2016        | 1/12/2017            |
| AC Power Source                | IN0062                | 1/12/2016        | 1/12/2017            |
| DC Power Supply                | --                    | --               | --                   |
| Room Thermometer               | IN0145                | 1/13/2016        | 1/13/2017            |

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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  | 30  | 10  | 50 | 30 | 10 |
| RCR |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |    |    |    |
| 0   | 119 | 119 | 119 | 119 | 116 | 116 | 116 | 116 | 110 | 110 | 110 | 105 | 105 | 105 | 101 | 101 | 101 |    |    | 98 |
| 1   | 108 | 102 | 98  | 94  | 105 | 100 | 96  | 92  | 95  | 92  | 89  | 91  | 88  | 86  | 87  | 85  | 83  |    |    | 81 |
| 2   | 98  | 89  | 82  | 76  | 95  | 87  | 80  | 75  | 83  | 77  | 73  | 79  | 75  | 71  | 76  | 72  | 69  |    |    | 67 |
| 3   | 89  | 78  | 69  | 63  | 86  | 76  | 68  | 62  | 73  | 66  | 61  | 70  | 64  | 59  | 67  | 62  | 58  |    |    | 56 |
| 4   | 81  | 69  | 60  | 53  | 79  | 67  | 59  | 52  | 65  | 57  | 52  | 62  | 56  | 51  | 60  | 54  | 50  |    |    | 47 |
| 5   | 75  | 61  | 52  | 45  | 72  | 60  | 52  | 45  | 58  | 50  | 44  | 56  | 49  | 44  | 54  | 48  | 43  |    |    | 41 |
| 6   | 69  | 55  | 46  | 40  | 67  | 54  | 46  | 39  | 52  | 45  | 39  | 50  | 44  | 38  | 49  | 43  | 38  |    |    | 36 |
| 7   | 64  | 50  | 41  | 35  | 62  | 49  | 41  | 35  | 47  | 40  | 34  | 46  | 39  | 34  | 44  | 38  | 34  |    |    | 32 |
| 8   | 59  | 46  | 37  | 31  | 58  | 45  | 37  | 31  | 43  | 36  | 31  | 42  | 35  | 30  | 41  | 35  | 30  |    |    | 28 |
| 9   | 55  | 42  | 34  | 28  | 54  | 41  | 33  | 28  | 40  | 33  | 28  | 39  | 32  | 27  | 38  | 32  | 27  |    |    | 25 |
| 10  | 52  | 39  | 31  | 25  | 51  | 38  | 30  | 25  | 37  | 30  | 25  | 36  | 29  | 25  | 35  | 29  | 25  |    |    | 23 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 4563 | 4563 | 4563 |
| 5°  | 4537 | 4450 | 4466 |
| 10° | 4491 | 4359 | 4376 |
| 15° | 4436 | 4261 | 4269 |
| 20° | 4377 | 4153 | 4165 |
| 25° | 4310 | 4042 | 4058 |
| 30° | 4235 | 3925 | 3938 |
| 35° | 4144 | 3797 | 3819 |
| 40° | 4049 | 3664 | 3679 |
| 45° | 3946 | 3518 | 3529 |
| 50° | 3817 | 3352 | 3367 |
| 55° | 3675 | 3170 | 3189 |
| 60° | 3507 | 2940 | 2981 |
| 65° | 3254 | 2681 | 2775 |
| 70° | 2902 | 2381 | 2535 |
| 75° | 2420 | 2053 | 2317 |
| 80° | 1733 | 1729 | 2119 |
| 85° | 835  | 1399 | 1928 |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 3946 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 53.5   | 3.1       |
| 10°-20°   | 153.4  | 9.0       |
| 20°-30°   | 232.8  | 13.6      |
| 30°-40°   | 281.5  | 16.5      |
| 40°-50°   | 293.7  | 17.2      |
| 50°-60°   | 268.6  | 15.7      |
| 60°-70°   | 209.4  | 12.2      |
| 70°-80°   | 130.9  | 7.7       |
| 80°-90°   | 59.5   | 3.5       |
| 90°-100°  | 19.9   | 1.2       |
| 100°-110° | 5.0    | 0.3       |
| 110°-120° | 0.8    | 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°    | 439.7  | 25.7      |
| 0°-40°    | 721.2  | 42.2      |
| 0°-60°    | 1283.5 | 75.1      |
| 0°-90°    | 1683.3 | 98.5      |
| 90°-120°  | 25.7   | 1.5       |
| 90°-150°  | 25.7   | 1.5       |
| 90°-180°  | 26.0   | 1.5       |
| 0°-180°   | 1709.0 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°  | 22.5° | 45° | 67.5° | 90° | Flux |
|------|-----|-------|-----|-------|-----|------|
| 0°   | 565 | 565   | 565 | 565   | 565 |      |
| 5°   | 564 | 563   | 560 | 563   | 563 | 54   |
| 15°  | 543 | 544   | 542 | 545   | 545 | 153  |
| 25°  | 503 | 503   | 504 | 508   | 509 | 232  |
| 35°  | 445 | 447   | 449 | 453   | 455 | 279  |
| 45°  | 374 | 378   | 381 | 385   | 386 | 289  |
| 55°  | 292 | 296   | 301 | 306   | 308 | 261  |
| 65°  | 201 | 204   | 211 | 220   | 223 | 199  |
| 75°  | 102 | 108   | 124 | 138   | 144 | 108  |
| 85°  | 18  | 32    | 56  | 74    | 80  | 22   |
| 90°  | 0   | 12    | 33  | 49    | 55  | 1    |
| 95°  | 0   | 3     | 17  | 31    | 36  | 0    |
| 105° | 0   | 0     | 3   | 8     | 11  | 0    |
| 115° | 0   | 0     | 0   | 2     | 2   | 0    |
| 125° | 0   | 0     | 0   | 0     | 0   | 0    |
| 135° | 0   | 0     | 0   | 0     | 0   | 0    |
| 145° | 0   | 0     | 0   | 0     | 0   | 0    |
| 155° | 0   | 0     | 0   | 0     | 0   | 0    |
| 165° | 0   | 0     | 0   | 0     | 0   | 0    |
| 175° | 0   | 0     | 0   | 0     | 0   | 0    |
| 180° | 0   | 0     | 0   | 0     | 0   | 0    |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°    | 22.5° | 45°   | 67.5° | 90°   |
|--------|-------|-------|-------|-------|-------|
| 0°     | 565.2 | 565.2 | 565.2 | 565.2 | 565.2 |
| 2.5°   | 565.9 | 565.1 | 562.6 | 565.1 | 565.0 |
| 5°     | 564.0 | 563.0 | 560.4 | 563.1 | 563.1 |
| 7.5°   | 560.3 | 559.9 | 557.6 | 560.7 | 560.7 |
| 10°    | 555.9 | 555.8 | 553.9 | 557.2 | 557.4 |
| 12.5°  | 549.8 | 550.3 | 548.6 | 551.8 | 552.2 |
| 15°    | 542.6 | 543.5 | 542.0 | 545.1 | 545.0 |
| 17.5°  | 534.7 | 535.3 | 534.2 | 537.7 | 537.5 |
| 20°    | 525.0 | 525.7 | 524.9 | 528.5 | 528.9 |
| 22.5°  | 514.2 | 515.1 | 515.0 | 518.7 | 519.8 |
| 25°    | 502.7 | 503.1 | 503.7 | 507.9 | 508.7 |
| 27.5°  | 490.1 | 490.7 | 491.7 | 495.5 | 496.3 |
| 30°    | 476.2 | 477.3 | 478.4 | 482.4 | 483.4 |
| 32.5°  | 461.6 | 462.6 | 464.0 | 469.2 | 469.7 |
| 35°    | 445.0 | 447.0 | 448.9 | 453.4 | 455.3 |
| 37.5°  | 428.5 | 431.1 | 432.8 | 437.6 | 439.0 |
| 40°    | 411.1 | 413.6 | 416.4 | 421.5 | 422.4 |
| 42.5°  | 392.8 | 395.7 | 399.1 | 403.6 | 405.2 |
| 45°    | 374.4 | 377.8 | 380.8 | 384.6 | 386.4 |
| 47.5°  | 354.6 | 357.9 | 361.6 | 365.9 | 367.1 |
| 50°    | 334.1 | 337.9 | 341.9 | 345.9 | 348.0 |
| 52.5°  | 313.0 | 317.7 | 322.2 | 326.5 | 328.5 |
| 55°    | 292.2 | 295.7 | 301.1 | 305.5 | 307.5 |
| 57.5°  | 270.6 | 273.6 | 278.5 | 285.7 | 286.7 |
| 60°    | 248.6 | 251.3 | 256.4 | 262.2 | 264.6 |
| 62.5°  | 224.4 | 228.0 | 233.3 | 240.8 | 242.9 |
| 65°    | 200.8 | 204.3 | 211.3 | 219.7 | 223.2 |
| 67.5°  | 178.0 | 179.2 | 188.3 | 197.1 | 202.7 |
| 70°    | 151.1 | 155.6 | 166.2 | 177.0 | 181.2 |
| 72.5°  | 127.9 | 132.4 | 144.0 | 156.7 | 162.0 |
| 75°    | 101.7 | 107.9 | 123.7 | 138.4 | 143.6 |
| 77.5°  | 78.6  | 85.5  | 105.0 | 119.9 | 125.9 |
| 80°    | 54.9  | 65.7  | 86.9  | 103.7 | 110.2 |
| 82.5°  | 34.5  | 47.8  | 70.5  | 88.1  | 93.8  |
| 85°    | 17.6  | 32.5  | 55.8  | 73.8  | 80.3  |
| 87.5°  | 4.7   | 21.1  | 43.4  | 60.6  | 67.3  |
| 90°    | 0.1   | 12.1  | 32.9  | 49.4  | 55.4  |
| 92.5°  | 0.1   | 6.8   | 24.5  | 39.3  | 45.4  |
| 95°    | 0.1   | 3.2   | 17.1  | 30.9  | 35.7  |
| 97.5°  | 0.1   | 1.3   | 11.7  | 23.3  | 28.1  |
| 100°   | 0.1   | 0.7   | 7.5   | 16.9  | 21.1  |
| 102.5° | 0.3   | 0.4   | 4.7   | 12.1  | 15.5  |
| 105°   | 0.3   | 0.4   | 2.8   | 8.3   | 11.1  |
| 107.5° | 0.3   | 0.4   | 1.6   | 5.6   | 7.6   |
| 110°   | 0.4   | 0.4   | 0.9   | 3.5   | 5.1   |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°  | 22.5° | 45° | 67.5° | 90° |
|--------|-----|-------|-----|-------|-----|
| 112.5° | 0.4 | 0.4   | 0.5 | 2.3   | 3.3 |
| 115°   | 0.4 | 0.4   | 0.5 | 1.5   | 2.1 |
| 117.5° | 0.0 | 0.0   | 0.0 | 0.0   | 0.0 |
| 120°   | 0.0 | 0.0   | 0.0 | 0.0   | 0.0 |
| 122.5° | 0.0 | 0.0   | 0.0 | 0.0   | 0.0 |
| 125°   | 0.0 | 0.0   | 0.0 | 0.0   | 0.0 |
| 127.5° | 0.0 | 0.0   | 0.0 | 0.0   | 0.0 |
| 130°   | 0.0 | 0.0   | 0.0 | 0.0   | 0.0 |
| 132.5° | 0.0 | 0.0   | 0.0 | 0.0   | 0.0 |
| 135°   | 0.0 | 0.0   | 0.0 | 0.0   | 0.0 |
| 137.5° | 0.0 | 0.0   | 0.0 | 0.0   | 0.0 |
| 140°   | 0.0 | 0.0   | 0.0 | 0.0   | 0.0 |
| 142.5° | 0.0 | 0.0   | 0.0 | 0.0   | 0.0 |
| 145°   | 0.0 | 0.0   | 0.0 | 0.0   | 0.0 |
| 147.5° | 0.0 | 0.0   | 0.0 | 0.0   | 0.0 |
| 150°   | 0.0 | 0.0   | 0.0 | 0.0   | 0.0 |
| 152.5° | 0.0 | 0.0   | 0.0 | 0.0   | 0.0 |
| 155°   | 0.0 | 0.0   | 0.0 | 0.0   | 0.0 |
| 157.5° | 0.0 | 0.0   | 0.0 | 0.0   | 0.0 |
| 160°   | 0.0 | 0.0   | 0.0 | 0.0   | 0.0 |
| 162.5° | 0.0 | 0.0   | 0.0 | 0.0   | 0.0 |
| 165°   | 0.0 | 0.0   | 0.0 | 0.0   | 0.0 |
| 167.5° | 0.0 | 0.0   | 0.0 | 0.0   | 0.0 |
| 170°   | 0.0 | 0.0   | 0.0 | 0.0   | 0.0 |
| 172.5° | 0.0 | 0.0   | 0.0 | 0.0   | 0.0 |
| 175°   | 0.0 | 0.0   | 0.0 | 0.0   | 0.0 |
| 177.5° | 0.0 | 0.0   | 0.0 | 0.0   | 0.0 |
| 180°   | 0.0 | 0.0   | 0.0 | 0.0   | 0.0 |

(END OF REPORT)