

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: P517786

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

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: P517786  
Test Lab: INNOVATION CENTER  
Issue Date: 4/27/2021  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: FAIL-SAFE  
Catalog Number: HVL8-1-LD4-2HI-50-UNV-O-EDD  
Description: 1 FOOT, 8 INCH WIDE, HVL LED LUMINAIRE, WITH 5000K, 80 CRI LEDS  
Light Source: -  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 2088.0 lumens  
Efficiency: N/A  
Efficacy: 97.1 lumens/watt  
Spacing Criteria (0/90/45): 1.25 / 1.27 / 1.38  
Luminous Opening: Rectangular w/ Sides (W: 0.67' x L: 1' x H: 0.17')  
CIE Type: Direct

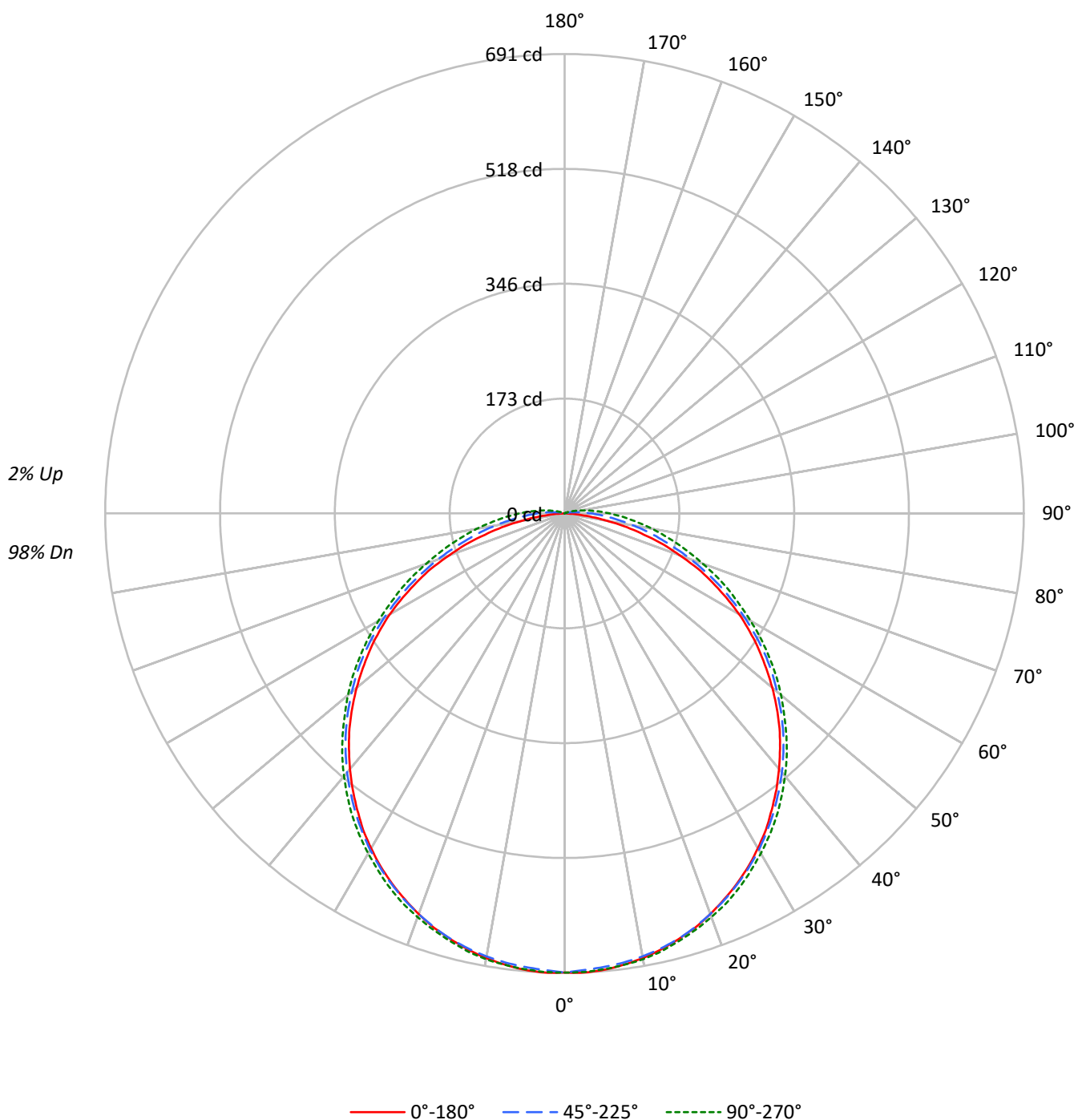
Input Watts (W): 21.5  
Input Voltage (V): NR  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT

| 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



TEST NUMBER: P517786

CATALOG NUMBER: HVL8-1-LD4-2HI-50-UNV-O-EDD

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

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

|     | 0°    | 45°   | 90°   |
|-----|-------|-------|-------|
| 0°  | 11150 | 11150 | 11150 |
| 5°  | 11008 | 10818 | 10912 |
| 10° | 10817 | 10546 | 10693 |
| 15° | 10607 | 10260 | 10430 |
| 20° | 10390 | 9951  | 10175 |
| 25° | 10153 | 9639  | 9917  |
| 30° | 9895  | 9311  | 9622  |
| 35° | 9596  | 8962  | 9331  |
| 40° | 9286  | 8596  | 8991  |
| 45° | 8954  | 8206  | 8623  |
| 50° | 8552  | 7765  | 8228  |
| 55° | 8117  | 7289  | 7793  |
| 60° | 7612  | 6696  | 7285  |
| 65° | 6904  | 6045  | 6782  |
| 70° | 5977  | 5296  | 6195  |
| 75° | 4776  | 4489  | 5663  |
| 80° | 3207  | 3693  | 5176  |
| 85° | 1371  | 2892  | 4715  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 8954 cd/sqm

TEST NUMBER: P517786

CATALOG NUMBER: HVL8-1-LD4-2HI-50-UNV-O-EDD

**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 65.3   | 3.1       |
| 10°-20°   | 187.5  | 9.0       |
| 20°-30°   | 284.4  | 13.6      |
| 30°-40°   | 343.9  | 16.5      |
| 40°-50°   | 358.9  | 17.2      |
| 50°-60°   | 328.1  | 15.7      |
| 60°-70°   | 255.8  | 12.2      |
| 70°-80°   | 160.0  | 7.7       |
| 80°-90°   | 72.7   | 3.5       |
| 90°-100°  | 24.4   | 1.2       |
| 100°-110° | 6.1    | 0.3       |
| 110°-120° | 1.0    | 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°    | 537.2  | 25.7      |
| 0°-40°    | 881.2  | 42.2      |
| 0°-60°    | 1568.1 | 75.1      |
| 0°-90°    | 2056.5 | 98.5      |
| 90°-120°  | 31.4   | 1.5       |
| 90°-150°  | 31.4   | 1.5       |
| 90°-180°  | 31.0   | 1.5       |
| 0°-180°   | 2088.0 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°  | 22.5° | 45° | 67.5° | 90° | Flux |
|------|-----|-------|-----|-------|-----|------|
| 0°   | 691 | 691   | 691 | 691   | 691 |      |
| 5°   | 689 | 688   | 685 | 688   | 688 | 65   |
| 15°  | 663 | 664   | 662 | 666   | 666 | 187  |
| 25°  | 614 | 615   | 615 | 621   | 622 | 283  |
| 35°  | 544 | 546   | 548 | 554   | 556 | 340  |
| 45°  | 458 | 462   | 465 | 470   | 472 | 352  |
| 55°  | 357 | 361   | 368 | 373   | 376 | 319  |
| 65°  | 245 | 250   | 258 | 268   | 273 | 243  |
| 75°  | 124 | 132   | 151 | 169   | 176 | 132  |
| 85°  | 22  | 40    | 68  | 90    | 98  | 27   |
| 90°  | 0   | 15    | 40  | 60    | 68  | 1    |
| 95°  | 0   | 4     | 21  | 38    | 44  | 0    |
| 105° | 0   | 0     | 3   | 10    | 14  | 0    |
| 115° | 0   | 0     | 1   | 2     | 3   | 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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CATALOG NUMBER: HVL8-1-LD4-2HI-50-UNV-O-EDD

**CANDELA DISTRIBUTION (FULL):**

|        | 0°    | 22.5° | 45°   | 67.5° | 90°   |
|--------|-------|-------|-------|-------|-------|
| 0°     | 690.6 | 690.6 | 690.6 | 690.6 | 690.6 |
| 2.5°   | 691.4 | 690.4 | 687.3 | 690.4 | 690.3 |
| 5°     | 689.1 | 687.8 | 684.7 | 688.0 | 688.0 |
| 7.5°   | 684.6 | 684.1 | 681.3 | 685.0 | 685.0 |
| 10°    | 679.2 | 679.0 | 676.7 | 680.8 | 681.0 |
| 12.5°  | 671.7 | 672.4 | 670.2 | 674.1 | 674.6 |
| 15°    | 662.9 | 664.0 | 662.3 | 666.0 | 665.8 |
| 17.5°  | 653.3 | 654.0 | 652.7 | 656.9 | 656.7 |
| 20°    | 641.4 | 642.2 | 641.3 | 645.7 | 646.1 |
| 22.5°  | 628.2 | 629.4 | 629.2 | 633.8 | 635.1 |
| 25°    | 614.2 | 614.7 | 615.4 | 620.6 | 621.6 |
| 27.5°  | 598.8 | 599.6 | 600.7 | 605.4 | 606.4 |
| 30°    | 581.8 | 583.1 | 584.4 | 589.3 | 590.6 |
| 32.5°  | 563.9 | 565.2 | 566.9 | 573.2 | 573.9 |
| 35°    | 543.7 | 546.2 | 548.5 | 554.0 | 556.3 |
| 37.5°  | 523.6 | 526.6 | 528.8 | 534.6 | 536.4 |
| 40°    | 502.2 | 505.3 | 508.7 | 514.9 | 516.1 |
| 42.5°  | 479.9 | 483.5 | 487.6 | 493.1 | 495.1 |
| 45°    | 457.5 | 461.5 | 465.3 | 469.8 | 472.1 |
| 47.5°  | 433.2 | 437.3 | 441.8 | 447.0 | 448.5 |
| 50°    | 408.1 | 412.9 | 417.7 | 422.6 | 425.2 |
| 52.5°  | 382.4 | 388.1 | 393.6 | 398.9 | 401.3 |
| 55°    | 357.0 | 361.2 | 367.9 | 373.3 | 375.7 |
| 57.5°  | 330.6 | 334.2 | 340.2 | 349.0 | 350.3 |
| 60°    | 303.8 | 307.0 | 313.2 | 320.4 | 323.3 |
| 62.5°  | 274.1 | 278.5 | 285.1 | 294.2 | 296.8 |
| 65°    | 245.3 | 249.6 | 258.2 | 268.5 | 272.7 |
| 67.5°  | 217.5 | 219.0 | 230.0 | 240.8 | 247.6 |
| 70°    | 184.6 | 190.1 | 203.0 | 216.2 | 221.4 |
| 72.5°  | 156.3 | 161.8 | 176.0 | 191.4 | 198.0 |
| 75°    | 124.2 | 131.9 | 151.1 | 169.1 | 175.5 |
| 77.5°  | 96.1  | 104.5 | 128.3 | 146.5 | 153.8 |
| 80°    | 67.1  | 80.3  | 106.1 | 126.7 | 134.6 |
| 82.5°  | 42.2  | 58.4  | 86.1  | 107.6 | 114.6 |
| 85°    | 21.5  | 39.7  | 68.2  | 90.2  | 98.2  |
| 87.5°  | 5.7   | 25.7  | 53.1  | 74.1  | 82.2  |
| 90°    | 0.2   | 14.8  | 40.2  | 60.4  | 67.7  |
| 92.5°  | 0.2   | 8.3   | 30.0  | 48.0  | 55.5  |
| 95°    | 0.2   | 3.9   | 20.8  | 37.8  | 43.6  |
| 97.5°  | 0.2   | 1.6   | 14.3  | 28.5  | 34.4  |
| 100°   | 0.2   | 0.8   | 9.1   | 20.7  | 25.7  |
| 102.5° | 0.3   | 0.5   | 5.7   | 14.8  | 18.9  |
| 105°   | 0.3   | 0.5   | 3.4   | 10.1  | 13.5  |
| 107.5° | 0.3   | 0.5   | 2.0   | 6.8   | 9.3   |
| 110°   | 0.5   | 0.5   | 1.1   | 4.2   | 6.2   |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°  | 22.5° | 45° | 67.5° | 90° |
|--------|-----|-------|-----|-------|-----|
| 112.5° | 0.5 | 0.5   | 0.7 | 2.8   | 4.1 |
| 115°   | 0.5 | 0.5   | 0.7 | 1.8   | 2.6 |
| 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)