

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: P517833

Luminaire Tested: HVL8-1-LD4-3HI-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: P517833  
Test Lab: INNOVATION CENTER  
Issue Date: 4/27/2021  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: FAIL-SAFE  
Catalog Number: HVL8-1-LD4-3HI-50-UNV-O-EDD-90  
Description: 1 FOOT, 8 INCH WIDE, HVL LED LUMINAIRE, WITH 5000K, 90 CRI LEDS  
Light Source: -  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 3294.0 lumens  
Efficiency: N/A  
Efficacy: 104.6 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

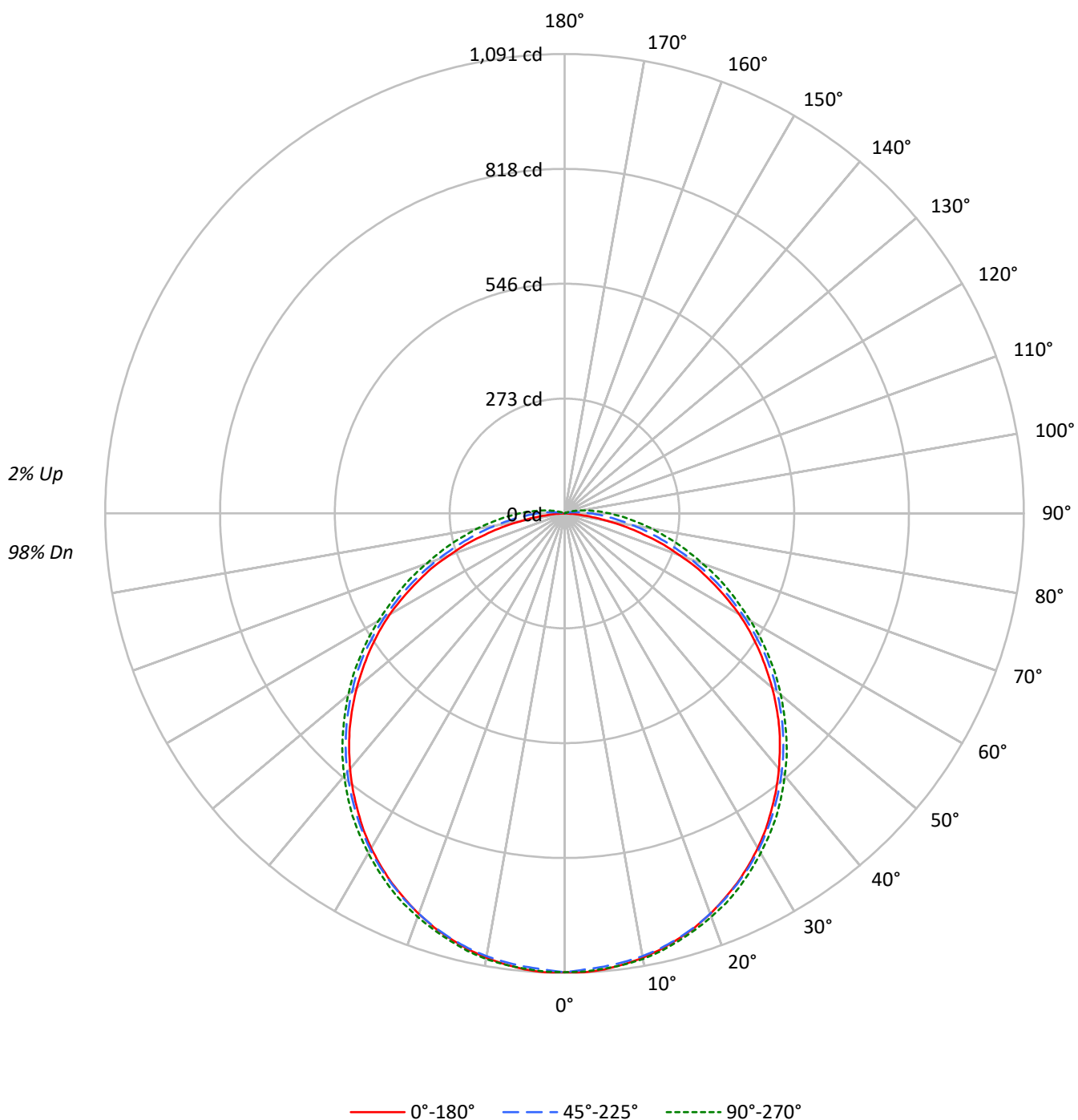
Input Watts (W): 31.5  
Input Voltage (V): NR  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT

| 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



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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°  | 17591 | 17591 | 17591 |
| 5°  | 17366 | 17067 | 17213 |
| 10° | 17066 | 16639 | 16869 |
| 15° | 16734 | 16186 | 16455 |
| 20° | 16392 | 15698 | 16053 |
| 25° | 16018 | 15205 | 15645 |
| 30° | 15611 | 14690 | 15181 |
| 35° | 15140 | 14137 | 14721 |
| 40° | 14650 | 13563 | 14183 |
| 45° | 14125 | 12945 | 13605 |
| 50° | 13493 | 12251 | 12981 |
| 55° | 12805 | 11499 | 12296 |
| 60° | 12007 | 10564 | 11494 |
| 65° | 10892 | 9535  | 10699 |
| 70° | 9428  | 8356  | 9774  |
| 75° | 7538  | 7080  | 8935  |
| 80° | 5057  | 5830  | 8167  |
| 85° | 2162  | 4563  | 7438  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 14125 cd/sqm

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CATALOG NUMBER: HVL8-1-LD4-3HI-50-UNV-O-EDD-90

**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 103.1  | 3.1       |
| 10°-20°   | 295.7  | 9.0       |
| 20°-30°   | 448.7  | 13.6      |
| 30°-40°   | 542.6  | 16.5      |
| 40°-50°   | 566.1  | 17.2      |
| 50°-60°   | 517.6  | 15.7      |
| 60°-70°   | 403.5  | 12.2      |
| 70°-80°   | 252.4  | 7.7       |
| 80°-90°   | 114.7  | 3.5       |
| 90°-100°  | 38.4   | 1.2       |
| 100°-110° | 9.7    | 0.3       |
| 110°-120° | 1.5    | 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°    | 847.5  | 25.7      |
| 0°-40°    | 1390.1 | 42.2      |
| 0°-60°    | 2473.8 | 75.1      |
| 0°-90°    | 3244.4 | 98.5      |
| 90°-120°  | 49.6   | 1.5       |
| 90°-150°  | 49.6   | 1.5       |
| 90°-180°  | 50.0   | 1.5       |
| 0°-180°   | 3294.0 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 1090 | 1090  | 1090 | 1090  | 1090 |      |
| 5°   | 1087 | 1085  | 1080 | 1085  | 1085 | 103  |
| 15°  | 1046 | 1048  | 1045 | 1051  | 1050 | 295  |
| 25°  | 969  | 970   | 971  | 979   | 981  | 447  |
| 35°  | 858  | 862   | 865  | 874   | 878  | 537  |
| 45°  | 722  | 728   | 734  | 741   | 745  | 556  |
| 55°  | 563  | 570   | 580  | 589   | 593  | 503  |
| 65°  | 387  | 394   | 407  | 424   | 430  | 383  |
| 75°  | 196  | 208   | 238  | 267   | 277  | 209  |
| 85°  | 34   | 63    | 108  | 142   | 155  | 43   |
| 90°  | 0    | 23    | 63   | 95    | 107  | 1    |
| 95°  | 0    | 6     | 33   | 60    | 69   | 0    |
| 105° | 0    | 1     | 5    | 16    | 21   | 1    |
| 115° | 1    | 1     | 1    | 3     | 4    | 1    |
| 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°     | 1089.5 | 1089.5 | 1089.5 | 1089.5 | 1089.5 |
| 2.5°   | 1090.7 | 1089.2 | 1084.3 | 1089.2 | 1088.9 |
| 5°     | 1087.1 | 1085.1 | 1080.2 | 1085.3 | 1085.3 |
| 7.5°   | 1080.0 | 1079.2 | 1074.8 | 1080.7 | 1080.7 |
| 10°    | 1071.5 | 1071.2 | 1067.6 | 1074.0 | 1074.3 |
| 12.5°  | 1059.7 | 1060.7 | 1057.4 | 1063.5 | 1064.3 |
| 15°    | 1045.8 | 1047.6 | 1044.8 | 1050.7 | 1050.4 |
| 17.5°  | 1030.6 | 1031.7 | 1029.6 | 1036.3 | 1036.0 |
| 20°    | 1011.9 | 1013.2 | 1011.6 | 1018.6 | 1019.3 |
| 22.5°  | 991.1  | 992.9  | 992.6  | 999.8  | 1001.9 |
| 25°    | 969.0  | 969.8  | 970.8  | 979.0  | 980.6  |
| 27.5°  | 944.6  | 945.9  | 947.7  | 955.1  | 956.7  |
| 30°    | 917.9  | 920.0  | 922.0  | 929.7  | 931.8  |
| 32.5°  | 889.6  | 891.7  | 894.3  | 904.3  | 905.3  |
| 35°    | 857.8  | 861.7  | 865.2  | 874.0  | 877.6  |
| 37.5°  | 826.0  | 830.8  | 834.2  | 843.4  | 846.2  |
| 40°    | 792.3  | 797.2  | 802.6  | 812.3  | 814.1  |
| 42.5°  | 757.1  | 762.8  | 769.2  | 777.9  | 781.0  |
| 45°    | 721.7  | 728.1  | 734.0  | 741.2  | 744.8  |
| 47.5°  | 683.4  | 689.8  | 697.0  | 705.2  | 707.6  |
| 50°    | 643.9  | 651.3  | 659.0  | 666.7  | 670.8  |
| 52.5°  | 603.3  | 612.3  | 621.0  | 629.2  | 633.1  |
| 55°    | 563.2  | 569.9  | 580.4  | 588.9  | 592.8  |
| 57.5°  | 521.6  | 527.3  | 536.8  | 550.6  | 552.7  |
| 60°    | 479.2  | 484.4  | 494.1  | 505.4  | 510.1  |
| 62.5°  | 432.5  | 439.4  | 449.7  | 464.1  | 468.2  |
| 65°    | 387.0  | 393.7  | 407.3  | 423.5  | 430.2  |
| 67.5°  | 343.1  | 345.4  | 362.9  | 379.8  | 390.6  |
| 70°    | 291.2  | 300.0  | 320.3  | 341.1  | 349.3  |
| 72.5°  | 246.6  | 255.3  | 277.6  | 302.0  | 312.3  |
| 75°    | 196.0  | 208.0  | 238.3  | 266.8  | 276.9  |
| 77.5°  | 151.5  | 164.9  | 202.4  | 231.1  | 242.7  |
| 80°    | 105.8  | 126.6  | 167.5  | 199.8  | 212.4  |
| 82.5°  | 66.5   | 92.2   | 135.9  | 169.8  | 180.8  |
| 85°    | 33.9   | 62.7   | 107.6  | 142.3  | 154.9  |
| 87.5°  | 9.0    | 40.6   | 83.7   | 116.9  | 129.7  |
| 90°    | 0.3    | 23.4   | 63.4   | 95.3   | 106.8  |
| 92.5°  | 0.3    | 13.1   | 47.3   | 75.8   | 87.6   |
| 95°    | 0.3    | 6.2    | 32.9   | 59.6   | 68.8   |
| 97.5°  | 0.3    | 2.6    | 22.6   | 44.9   | 54.2   |
| 100°   | 0.3    | 1.3    | 14.4   | 32.6   | 40.6   |
| 102.5° | 0.5    | 0.8    | 9.0    | 23.4   | 29.8   |
| 105°   | 0.5    | 0.8    | 5.4    | 15.9   | 21.3   |
| 107.5° | 0.5    | 0.8    | 3.1    | 10.8   | 14.6   |
| 110°   | 0.8    | 0.8    | 1.8    | 6.7    | 9.8    |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°  | 22.5° | 45° | 67.5° | 90° |
|--------|-----|-------|-----|-------|-----|
| 112.5° | 0.8 | 0.8   | 1.0 | 4.4   | 6.4 |
| 115°   | 0.8 | 0.8   | 1.0 | 2.8   | 4.1 |
| 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)