

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: P518169

Luminaire Tested: HVL8-8-LD4-1HI-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: P518169  
Test Lab: INNOVATION CENTER  
Issue Date: 4/27/2021  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: FAIL-SAFE  
Catalog Number: HVL8-8-LD4-1HI-50-UNV-O-EDD-90  
Description: 8 FOOT, 8 INCH WIDE, HVL LED LUMINAIRE, WITH 5000K, 90 CRI LEDS  
Light Source: -  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 8798.0 lumens  
Efficiency: N/A  
Efficacy: 102.3 lumens/watt  
Spacing Criteria (0/90/45): 1.25 / 1.27 / 1.38  
Luminous Opening: Rectangular w/ Sides (W: 0.67' x L: 8' x H: 0.17')  
CIE Type: Direct

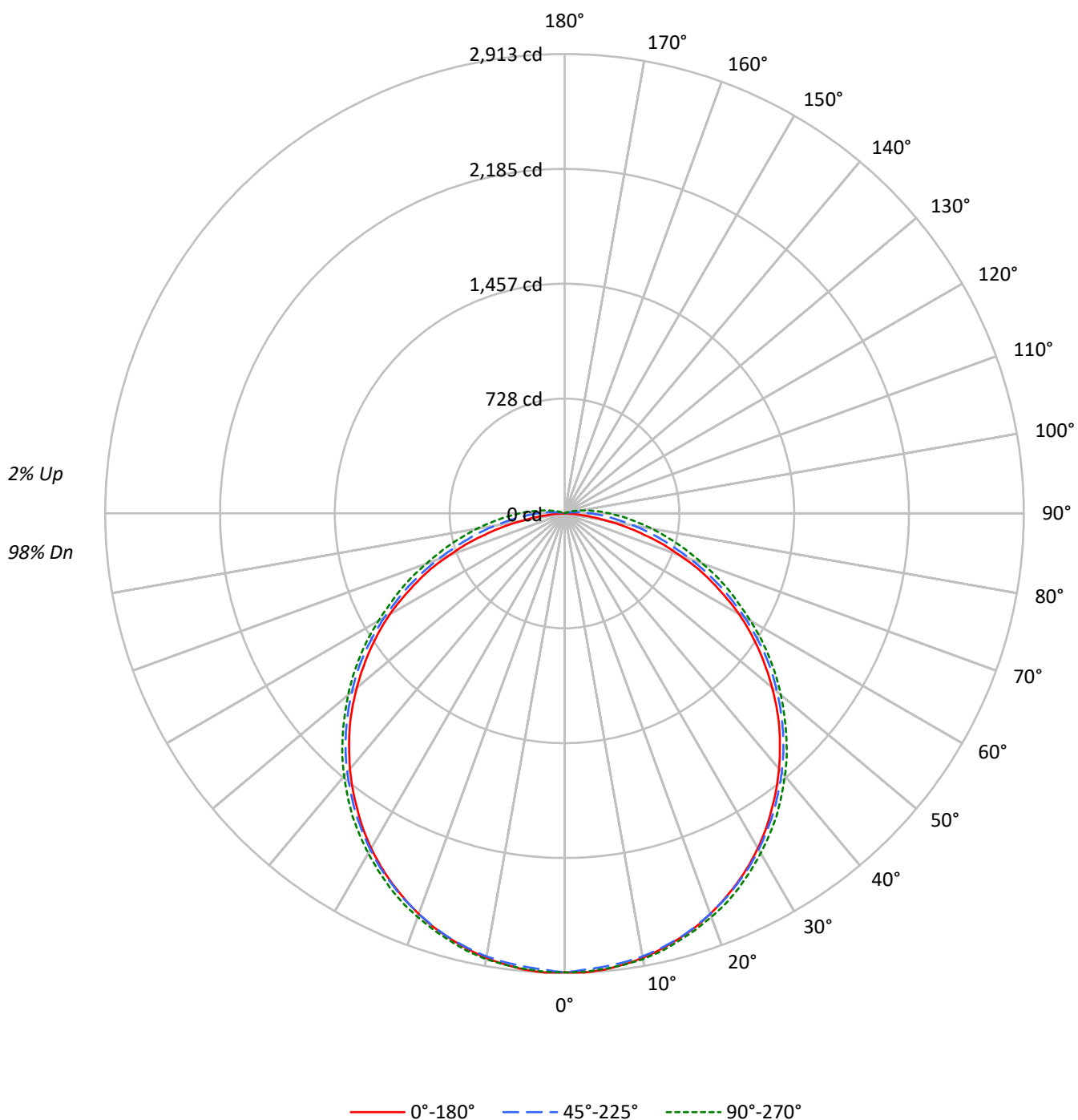
Input Watts (W): 86  
Input Voltage (V): NR  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT

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

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 5873 | 5873 | 5873 |
| 5°  | 5872 | 5749 | 5747 |
| 10° | 5843 | 5653 | 5632 |
| 15° | 5804 | 5546 | 5494 |
| 20° | 5761 | 5425 | 5360 |
| 25° | 5708 | 5301 | 5223 |
| 30° | 5645 | 5168 | 5068 |
| 35° | 5564 | 5021 | 4914 |
| 40° | 5480 | 4866 | 4735 |
| 45° | 5389 | 4696 | 4542 |
| 50° | 5269 | 4500 | 4334 |
| 55° | 5140 | 4283 | 4105 |
| 60° | 4987 | 4000 | 3837 |
| 65° | 4725 | 3683 | 3572 |
| 70° | 4342 | 3307 | 3263 |
| 75° | 3787 | 2895 | 2983 |
| 80° | 2937 | 2491 | 2727 |
| 85° | 1693 | 2087 | 2482 |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 5389 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 275.4  | 3.1       |
| 10°-20°   | 789.9  | 9.0       |
| 20°-30°   | 1198.5 | 13.6      |
| 30°-40°   | 1449.2 | 16.5      |
| 40°-50°   | 1512.1 | 17.2      |
| 50°-60°   | 1382.5 | 15.7      |
| 60°-70°   | 1077.7 | 12.2      |
| 70°-80°   | 674.2  | 7.7       |
| 80°-90°   | 306.2  | 3.5       |
| 90°-100°  | 102.6  | 1.2       |
| 100°-110° | 25.8   | 0.3       |
| 110°-120° | 4.1    | 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°    | 2263.7 | 25.7      |
| 0°-40°    | 3712.9 | 42.2      |
| 0°-60°    | 6607.5 | 75.1      |
| 0°-90°    | 8665.5 | 98.5      |
| 90°-120°  | 132.5  | 1.5       |
| 90°-150°  | 132.5  | 1.5       |
| 90°-180°  | 132.0  | 1.5       |
| 0°-180°   | 8798.0 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 2910 | 2910  | 2910 | 2910  | 2910 |      |
| 5°   | 2904 | 2898  | 2885 | 2899  | 2899 | 276  |
| 15°  | 2793 | 2798  | 2790 | 2806  | 2806 | 788  |
| 25°  | 2588 | 2590  | 2593 | 2615  | 2619 | 1193 |
| 35°  | 2291 | 2301  | 2311 | 2334  | 2344 | 1434 |
| 45°  | 1928 | 1945  | 1960 | 1980  | 1989 | 1485 |
| 55°  | 1504 | 1522  | 1550 | 1573  | 1583 | 1344 |
| 65°  | 1034 | 1052  | 1088 | 1131  | 1149 | 1023 |
| 75°  | 523  | 556   | 637  | 713   | 740  | 558  |
| 85°  | 90   | 167   | 287  | 380   | 414  | 115  |
| 90°  | 1    | 62    | 169  | 254   | 285  | 4    |
| 95°  | 1    | 16    | 88   | 159   | 184  | 1    |
| 105° | 1    | 2     | 14   | 42    | 57   | 1    |
| 115° | 2    | 2     | 3    | 8     | 11   | 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°     | 2909.8 | 2909.8 | 2909.8 | 2909.8 | 2909.8 |
| 2.5°   | 2913.3 | 2909.2 | 2896.1 | 2909.2 | 2908.5 |
| 5°     | 2903.7 | 2898.2 | 2885.2 | 2898.9 | 2898.9 |
| 7.5°   | 2884.5 | 2882.4 | 2870.7 | 2886.5 | 2886.5 |
| 10°    | 2861.8 | 2861.1 | 2851.5 | 2868.7 | 2869.4 |
| 12.5°  | 2830.3 | 2833.0 | 2824.1 | 2840.6 | 2842.6 |
| 15°    | 2793.2 | 2798.0 | 2790.5 | 2806.3 | 2805.6 |
| 17.5°  | 2752.8 | 2755.5 | 2750.0 | 2767.9 | 2767.2 |
| 20°    | 2702.7 | 2706.1 | 2702.0 | 2720.5 | 2722.6 |
| 22.5°  | 2647.1 | 2651.9 | 2651.2 | 2670.4 | 2675.9 |
| 25°    | 2588.1 | 2590.2 | 2592.9 | 2614.9 | 2619.0 |
| 27.5°  | 2523.0 | 2526.4 | 2531.2 | 2551.1 | 2555.2 |
| 30°    | 2451.6 | 2457.1 | 2462.6 | 2483.2 | 2488.7 |
| 32.5°  | 2376.2 | 2381.7 | 2388.5 | 2415.3 | 2418.0 |
| 35°    | 2291.1 | 2301.4 | 2311.0 | 2334.3 | 2343.9 |
| 37.5°  | 2206.1 | 2219.1 | 2228.0 | 2252.7 | 2260.2 |
| 40°    | 2116.2 | 2129.2 | 2143.6 | 2169.7 | 2174.5 |
| 42.5°  | 2022.2 | 2037.3 | 2054.5 | 2077.8 | 2086.0 |
| 45°    | 1927.6 | 1944.7 | 1960.5 | 1979.7 | 1989.3 |
| 47.5°  | 1825.3 | 1842.5 | 1861.7 | 1883.6 | 1889.8 |
| 50°    | 1719.7 | 1739.6 | 1760.2 | 1780.8 | 1791.7 |
| 52.5°  | 1611.3 | 1635.3 | 1658.7 | 1680.6 | 1690.9 |
| 55°    | 1504.3 | 1522.1 | 1550.3 | 1572.9 | 1583.2 |
| 57.5°  | 1393.2 | 1408.3 | 1433.7 | 1470.7 | 1476.2 |
| 60°    | 1280.0 | 1293.7 | 1319.8 | 1350.0 | 1362.3 |
| 62.5°  | 1155.2 | 1173.7 | 1201.1 | 1239.5 | 1250.5 |
| 65°    | 1033.7 | 1051.6 | 1087.9 | 1131.1 | 1149.0 |
| 67.5°  | 916.4  | 922.6  | 969.3  | 1014.5 | 1043.3 |
| 70°    | 777.9  | 801.2  | 855.4  | 911.0  | 932.9  |
| 72.5°  | 658.5  | 681.8  | 741.5  | 806.7  | 834.1  |
| 75°    | 523.4  | 555.6  | 636.6  | 712.7  | 739.5  |
| 77.5°  | 404.7  | 440.4  | 540.5  | 617.4  | 648.2  |
| 80°    | 282.6  | 338.2  | 447.2  | 533.7  | 567.3  |
| 82.5°  | 177.7  | 246.3  | 362.9  | 453.4  | 482.9  |
| 85°    | 90.5   | 167.4  | 287.4  | 380.0  | 413.6  |
| 87.5°  | 24.0   | 108.4  | 223.6  | 312.1  | 346.4  |
| 90°    | 0.7    | 62.4   | 169.4  | 254.5  | 285.4  |
| 92.5°  | 0.7    | 35.0   | 126.2  | 202.4  | 233.9  |
| 95°    | 0.7    | 16.5   | 87.8   | 159.1  | 183.8  |
| 97.5°  | 0.7    | 6.9    | 60.4   | 120.0  | 144.7  |
| 100°   | 0.7    | 3.4    | 38.4   | 87.1   | 108.4  |
| 102.5° | 1.4    | 2.1    | 24.0   | 62.4   | 79.6   |
| 105°   | 1.4    | 2.1    | 14.4   | 42.5   | 56.9   |
| 107.5° | 1.4    | 2.1    | 8.2    | 28.8   | 39.1   |
| 110°   | 2.1    | 2.1    | 4.8    | 17.8   | 26.1   |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°  | 22.5° | 45° | 67.5° | 90°  |
|--------|-----|-------|-----|-------|------|
| 112.5° | 2.1 | 2.1   | 2.7 | 11.7  | 17.1 |
| 115°   | 2.1 | 2.1   | 2.7 | 7.5   | 11.0 |
| 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)