

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: P518245

Luminaire Tested: HVL8-8-LD4-2STD-40-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: P518245  
Test Lab: INNOVATION CENTER  
Issue Date: 4/27/2021  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: FAIL-SAFE  
Catalog Number: HVL8-8-LD4-2STD-40-UNV-O-EDD-90  
Description: 8 FOOT, 8 INCH WIDE, HVL LED LUMINAIRE, WITH 4000K, 90 CRI LEDS  
Light Source: -  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 10727.0 lumens  
Efficiency: N/A  
Efficacy: 82.1 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

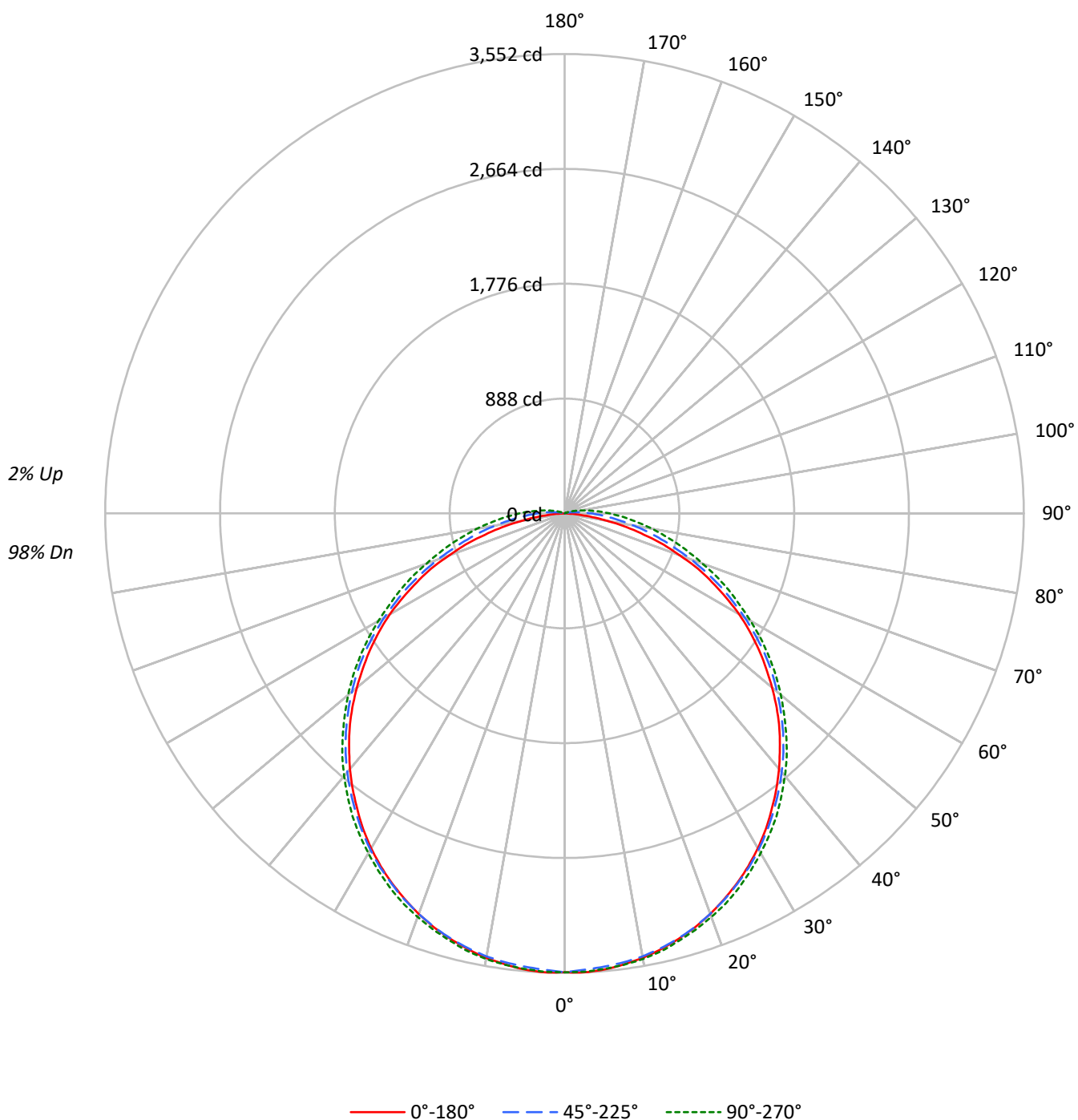
Input Watts (W): 130.7  
Input Voltage (V): NR  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT

| 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°  | 7160 | 7160 | 7160 |
| 5°  | 7159 | 7009 | 7007 |
| 10° | 7125 | 6892 | 6867 |
| 15° | 7076 | 6762 | 6699 |
| 20° | 7024 | 6614 | 6535 |
| 25° | 6960 | 6463 | 6368 |
| 30° | 6883 | 6300 | 6179 |
| 35° | 6783 | 6121 | 5992 |
| 40° | 6681 | 5932 | 5774 |
| 45° | 6571 | 5726 | 5538 |
| 50° | 6424 | 5486 | 5284 |
| 55° | 6267 | 5222 | 5005 |
| 60° | 6080 | 4877 | 4678 |
| 65° | 5762 | 4490 | 4355 |
| 70° | 5293 | 4032 | 3979 |
| 75° | 4617 | 3529 | 3637 |
| 80° | 3582 | 3038 | 3325 |
| 85° | 2065 | 2544 | 3027 |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 6571 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 335.7   | 3.1       |
| 10°-20°   | 963.0   | 9.0       |
| 20°-30°   | 1461.2  | 13.6      |
| 30°-40°   | 1766.9  | 16.5      |
| 40°-50°   | 1843.6  | 17.2      |
| 50°-60°   | 1685.6  | 15.7      |
| 60°-70°   | 1314.0  | 12.2      |
| 70°-80°   | 822.0   | 7.7       |
| 80°-90°   | 373.3   | 3.5       |
| 90°-100°  | 125.1   | 1.2       |
| 100°-110° | 31.4    | 0.3       |
| 110°-120° | 4.9     | 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°    | 2760.0  | 25.7      |
| 0°-40°    | 4526.9  | 42.2      |
| 0°-60°    | 8056.1  | 75.1      |
| 0°-90°    | 10565.5 | 98.5      |
| 90°-120°  | 161.5   | 1.5       |
| 90°-150°  | 161.5   | 1.5       |
| 90°-180°  | 161.0   | 1.5       |
| 0°-180°   | 10727.0 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 3548 | 3548  | 3548 | 3548  | 3548 |      |
| 5°   | 3540 | 3534  | 3518 | 3534  | 3534 | 336  |
| 15°  | 3406 | 3412  | 3402 | 3422  | 3421 | 961  |
| 25°  | 3156 | 3158  | 3161 | 3188  | 3193 | 1454 |
| 35°  | 2793 | 2806  | 2818 | 2846  | 2858 | 1748 |
| 45°  | 2350 | 2371  | 2390 | 2414  | 2425 | 1811 |
| 55°  | 1834 | 1856  | 1890 | 1918  | 1930 | 1639 |
| 65°  | 1260 | 1282  | 1326 | 1379  | 1401 | 1247 |
| 75°  | 638  | 678   | 776  | 869   | 902  | 680  |
| 85°  | 110  | 204   | 350  | 463   | 504  | 140  |
| 90°  | 1    | 76    | 207  | 310   | 348  | 4    |
| 95°  | 1    | 20    | 107  | 194   | 224  | 1    |
| 105° | 2    | 2     | 18   | 52    | 69   | 2    |
| 115° | 2    | 2     | 3    | 9     | 13   | 2    |
| 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°     | 3547.8 | 3547.8 | 3547.8 | 3547.8 | 3547.8 |
| 2.5°   | 3552.0 | 3547.0 | 3531.1 | 3547.0 | 3546.2 |
| 5°     | 3540.3 | 3533.6 | 3517.7 | 3534.5 | 3534.5 |
| 7.5°   | 3516.9 | 3514.4 | 3500.2 | 3519.4 | 3519.4 |
| 10°    | 3489.3 | 3488.5 | 3476.8 | 3497.7 | 3498.5 |
| 12.5°  | 3450.8 | 3454.2 | 3443.3 | 3463.4 | 3465.9 |
| 15°    | 3405.7 | 3411.5 | 3402.3 | 3421.6 | 3420.7 |
| 17.5°  | 3356.3 | 3359.7 | 3353.0 | 3374.7 | 3373.9 |
| 20°    | 3295.3 | 3299.4 | 3294.4 | 3317.0 | 3319.5 |
| 22.5°  | 3227.5 | 3233.4 | 3232.5 | 3256.0 | 3262.6 |
| 25°    | 3155.6 | 3158.1 | 3161.4 | 3188.2 | 3193.2 |
| 27.5°  | 3076.1 | 3080.3 | 3086.2 | 3110.4 | 3115.4 |
| 30°    | 2989.2 | 2995.8 | 3002.5 | 3027.6 | 3034.3 |
| 32.5°  | 2897.2 | 2903.8 | 2912.2 | 2944.8 | 2948.2 |
| 35°    | 2793.4 | 2806.0 | 2817.7 | 2846.1 | 2857.8 |
| 37.5°  | 2689.7 | 2705.6 | 2716.5 | 2746.6 | 2755.8 |
| 40°    | 2580.2 | 2596.1 | 2613.6 | 2645.4 | 2651.3 |
| 42.5°  | 2465.6 | 2484.0 | 2504.9 | 2533.3 | 2543.4 |
| 45°    | 2350.2 | 2371.1 | 2390.3 | 2413.7 | 2425.4 |
| 47.5°  | 2225.6 | 2246.5 | 2269.9 | 2296.6 | 2304.2 |
| 50°    | 2096.8 | 2121.0 | 2146.1 | 2171.2 | 2184.6 |
| 52.5°  | 1964.6 | 1993.9 | 2022.3 | 2049.1 | 2061.6 |
| 55°    | 1834.1 | 1855.9 | 1890.2 | 1917.8 | 1930.3 |
| 57.5°  | 1698.6 | 1717.0 | 1748.0 | 1793.2 | 1799.8 |
| 60°    | 1560.6 | 1577.4 | 1609.2 | 1646.0 | 1661.0 |
| 62.5°  | 1408.4 | 1431.0 | 1464.5 | 1511.3 | 1524.7 |
| 65°    | 1260.4 | 1282.1 | 1326.5 | 1379.2 | 1400.9 |
| 67.5°  | 1117.4 | 1124.9 | 1181.8 | 1237.0 | 1272.1 |
| 70°    | 948.4  | 976.9  | 1042.9 | 1110.7 | 1137.5 |
| 72.5°  | 802.9  | 831.3  | 904.1  | 983.6  | 1017.0 |
| 75°    | 638.1  | 677.5  | 776.1  | 869.0  | 901.6  |
| 77.5°  | 493.5  | 536.9  | 659.1  | 752.7  | 790.4  |
| 80°    | 344.6  | 412.3  | 545.3  | 650.7  | 691.7  |
| 82.5°  | 216.6  | 300.3  | 442.4  | 552.8  | 588.8  |
| 85°    | 110.4  | 204.1  | 350.4  | 463.3  | 504.3  |
| 87.5°  | 29.3   | 132.1  | 272.7  | 380.5  | 422.4  |
| 90°    | 0.8    | 76.1   | 206.6  | 310.3  | 347.9  |
| 92.5°  | 0.8    | 42.7   | 153.9  | 246.7  | 285.2  |
| 95°    | 0.8    | 20.1   | 107.1  | 194.0  | 224.1  |
| 97.5°  | 0.8    | 8.4    | 73.6   | 146.4  | 176.5  |
| 100°   | 0.8    | 4.2    | 46.8   | 106.2  | 132.1  |
| 102.5° | 1.7    | 2.5    | 29.3   | 76.1   | 97.0   |
| 105°   | 1.7    | 2.5    | 17.6   | 51.9   | 69.4   |
| 107.5° | 1.7    | 2.5    | 10.0   | 35.1   | 47.7   |
| 110°   | 2.5    | 2.5    | 5.9    | 21.7   | 31.8   |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°  | 22.5° | 45° | 67.5° | 90°  |
|--------|-----|-------|-----|-------|------|
| 112.5° | 2.5 | 2.5   | 3.3 | 14.2  | 20.9 |
| 115°   | 2.5 | 2.5   | 3.3 | 9.2   | 13.4 |
| 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)