

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: P518252

Luminaire Tested: HVL8-8-LD4-3HI-30-UNV-C-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: P518252  
Test Lab: INNOVATION CENTER  
Issue Date: 4/27/2021  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: FAIL-SAFE  
Catalog Number: HVL8-8-LD4-3HI-30-UNV-C-EDD  
Description: 8 FOOT, 8 INCH WIDE, HVL LED LUMINAIRE, WITH 3000K, 80 CRI LEDS  
Light Source: -  
Ballast/Driver: -

**Summary**

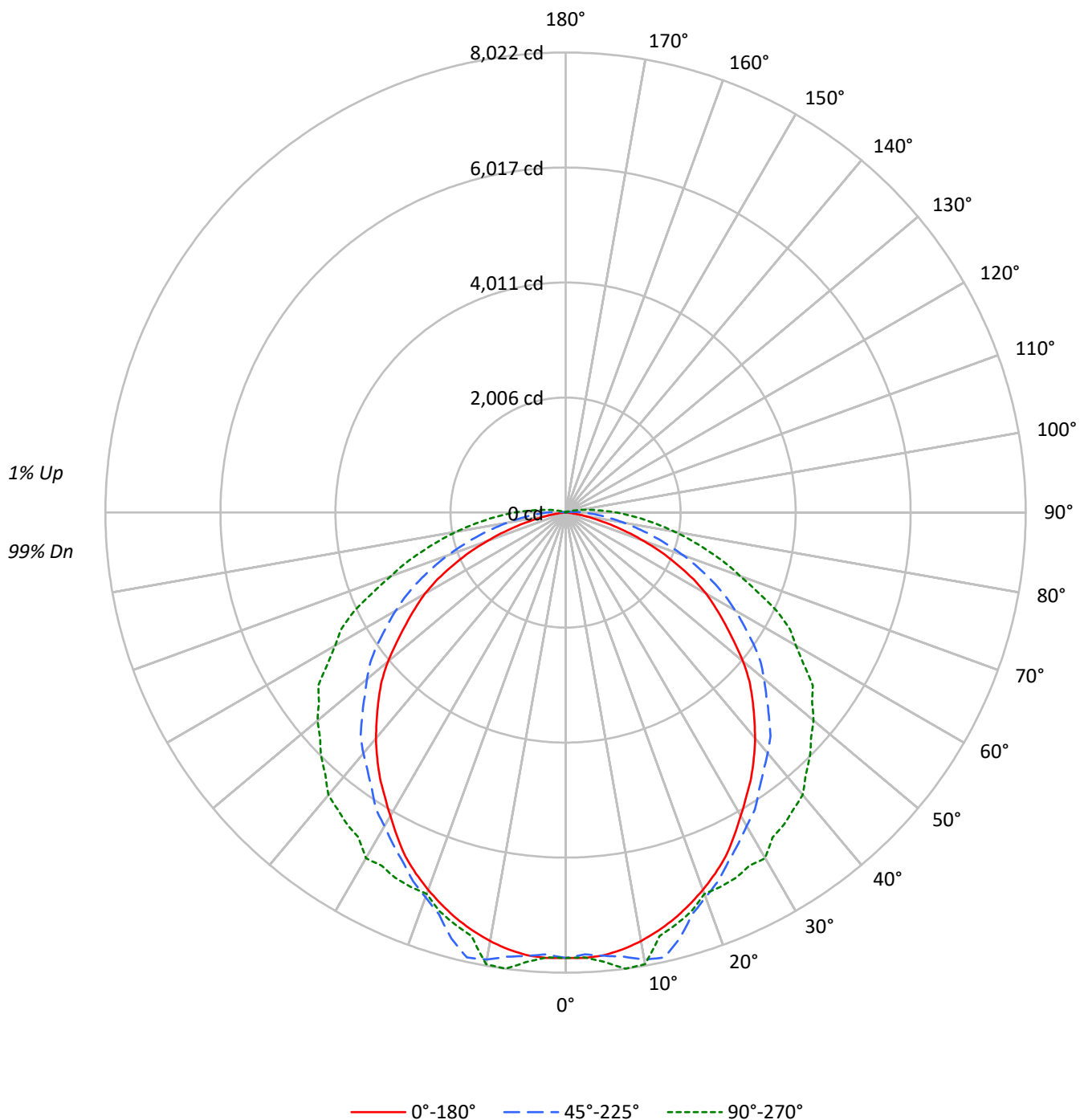
Lumens per Lamp: N/A  
Luminaire Lumens: 23393.0 lumens  
Efficiency: N/A  
Efficacy: 92.9 lumens/watt  
Spacing Criteria (0/90/45): 1.18 / 1.32 / 1.37  
Luminous Opening: Rectangular w/ Sides (W: 0.67' x L: 8' x H: 0.17')  
CIE Type: Direct

Input Watts (W): 251.8  
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 |    |    | 99 |
| 1   | 108 | 103 | 98  | 94  | 105 | 100 | 96  | 92  | 96  | 92  | 89  | 91  | 89  | 86  | 87  | 85  | 83  |    |    | 81 |
| 2   | 98  | 89  | 82  | 76  | 95  | 87  | 80  | 75  | 83  | 78  | 73  | 80  | 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  | 51  | 62  | 56  | 51  | 60  | 54  | 50  |    |    | 47 |
| 5   | 75  | 61  | 52  | 45  | 72  | 60  | 51  | 45  | 58  | 50  | 44  | 56  | 49  | 44  | 54  | 48  | 43  |    |    | 41 |
| 6   | 69  | 55  | 46  | 39  | 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°  | 15672 | 15672 | 15672 |
| 5°  | 15665 | 15457 | 15596 |
| 10° | 15487 | 15685 | 15692 |
| 15° | 15234 | 15279 | 14565 |
| 20° | 14920 | 14330 | 13929 |
| 25° | 14586 | 13727 | 14016 |
| 30° | 14064 | 13244 | 14171 |
| 35° | 13702 | 12787 | 13920 |
| 40° | 13312 | 12448 | 14006 |
| 45° | 12892 | 12008 | 13754 |
| 50° | 12377 | 11544 | 13649 |
| 55° | 11605 | 11048 | 13641 |
| 60° | 11031 | 10361 | 13059 |
| 65° | 9827  | 9536  | 12642 |
| 70° | 8105  | 8458  | 11337 |
| 75° | 5883  | 7143  | 10349 |
| 80° | 3403  | 5816  | 9291  |
| 85° | 1362  | 4445  | 8184  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 90°

Vertical Angle: 45°

Luminance: 13754 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 746.3   | 3.2       |
| 10°-20°   | 2125.3  | 9.1       |
| 20°-30°   | 3162.3  | 13.5      |
| 30°-40°   | 3801.0  | 16.2      |
| 40°-50°   | 4000.8  | 17.1      |
| 50°-60°   | 3712.3  | 15.9      |
| 60°-70°   | 2935.2  | 12.5      |
| 70°-80°   | 1792.9  | 7.7       |
| 80°-90°   | 781.2   | 3.3       |
| 90°-100°  | 243.2   | 1.0       |
| 100°-110° | 54.6    | 0.2       |
| 110°-120° | 22.0    | 0.1       |
| 120°-130° | 12.4    | 0.1       |
| 130°-140° | 3.3     | 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°    | 6033.9  | 25.8      |
| 0°-40°    | 9835.0  | 42.0      |
| 0°-60°    | 17548.2 | 75.0      |
| 0°-90°    | 23057.5 | 98.6      |
| 90°-120°  | 319.8   | 1.4       |
| 90°-150°  | 335.5   | 1.4       |
| 90°-180°  | 336.0   | 1.4       |
| 0°-180°   | 23393.0 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 7765 | 7765  | 7765 | 7765  | 7765 |      |
| 5°   | 7746 | 7730  | 7757 | 7844  | 7866 | 734  |
| 15°  | 7332 | 7613  | 7688 | 7433  | 7438 | 2065 |
| 25°  | 6614 | 7036  | 6715 | 6916  | 7028 | 3036 |
| 35°  | 5642 | 5799  | 5886 | 6421  | 6639 | 3526 |
| 45°  | 4611 | 4632  | 5013 | 5807  | 6024 | 3554 |
| 55°  | 3396 | 3452  | 3999 | 4874  | 5261 | 3052 |
| 65°  | 2150 | 2218  | 2817 | 3728  | 4067 | 2129 |
| 75°  | 813  | 1077  | 1571 | 2414  | 2566 | 887  |
| 85°  | 73   | 253   | 612  | 1188  | 1364 | 113  |
| 90°  | 2    | 76    | 321  | 753   | 887  | 3    |
| 95°  | 2    | 19    | 141  | 413   | 505  | 1    |
| 105° | 2    | 11    | 28   | 81    | 114  | 2    |
| 115° | 2    | 6     | 22   | 36    | 38   | 3    |
| 125° | 2    | 3     | 10   | 24    | 33   | 3    |
| 135° | 3    | 3     | 3    | 8     | 11   | 2    |
| 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°     | 7765.2 | 7765.2 | 7765.2 | 7765.2 | 7765.2 |
| 2.5°   | 7774.7 | 7754.1 | 7711.4 | 7752.5 | 7763.6 |
| 5°     | 7746.2 | 7730.4 | 7757.3 | 7844.3 | 7866.4 |
| 7.5°   | 7681.4 | 7741.5 | 7812.7 | 7970.8 | 8021.5 |
| 10°    | 7584.9 | 7698.8 | 7912.3 | 8046.8 | 7994.6 |
| 12.5°  | 7467.8 | 7660.8 | 7947.1 | 7684.5 | 7562.7 |
| 15°    | 7331.8 | 7613.3 | 7687.7 | 7433.0 | 7437.8 |
| 17.5°  | 7172.0 | 7573.8 | 7344.4 | 7338.1 | 7292.2 |
| 20°    | 6999.6 | 7440.9 | 7137.2 | 7124.6 | 7075.5 |
| 22.5°  | 6814.5 | 7265.3 | 6953.7 | 6928.4 | 7061.3 |
| 25°    | 6613.6 | 7036.0 | 6714.9 | 6915.8 | 7028.1 |
| 27.5°  | 6362.1 | 6735.4 | 6515.6 | 6800.3 | 6941.1 |
| 30°    | 6107.4 | 6425.4 | 6311.5 | 6708.5 | 6958.5 |
| 32.5°  | 5868.6 | 6101.1 | 6143.8 | 6673.7 | 6714.9 |
| 35°    | 5642.4 | 5799.0 | 5886.0 | 6420.6 | 6638.9 |
| 37.5°  | 5394.0 | 5436.7 | 5667.7 | 6314.7 | 6525.0 |
| 40°    | 5140.9 | 5114.1 | 5484.2 | 6140.7 | 6431.7 |
| 42.5°  | 4868.9 | 4859.4 | 5289.6 | 6053.7 | 6199.2 |
| 45°    | 4611.0 | 4631.6 | 5012.8 | 5806.9 | 6023.6 |
| 47.5°  | 4346.9 | 4373.8 | 4750.2 | 5536.4 | 5805.3 |
| 50°    | 4040.0 | 4074.8 | 4516.1 | 5296.0 | 5642.4 |
| 52.5°  | 3707.8 | 3774.2 | 4288.3 | 5068.2 | 5417.8 |
| 55°    | 3396.2 | 3451.6 | 3998.9 | 4873.6 | 5261.2 |
| 57.5°  | 3111.5 | 3144.7 | 3699.9 | 4628.4 | 4921.1 |
| 60°    | 2831.5 | 2839.4 | 3418.3 | 4356.4 | 4636.3 |
| 62.5°  | 2510.4 | 2524.6 | 3128.9 | 4035.2 | 4410.1 |
| 65°    | 2149.7 | 2217.7 | 2817.2 | 3728.4 | 4066.9 |
| 67.5°  | 1812.8 | 1931.4 | 2499.3 | 3446.8 | 3624.0 |
| 70°    | 1452.1 | 1653.0 | 2187.7 | 3116.2 | 3241.2 |
| 72.5°  | 1121.5 | 1357.2 | 1868.1 | 2746.1 | 2921.6 |
| 75°    | 813.1  | 1077.2 | 1570.8 | 2413.9 | 2565.7 |
| 77.5°  | 547.3  | 816.2  | 1292.4 | 2046.9 | 2247.8 |
| 80°    | 327.4  | 596.3  | 1044.0 | 1706.8 | 1933.0 |
| 82.5°  | 167.7  | 400.2  | 809.9  | 1431.6 | 1634.0 |
| 85°    | 72.8   | 253.1  | 612.2  | 1188.0 | 1363.5 |
| 87.5°  | 20.6   | 143.9  | 450.8  | 960.2  | 1108.9 |
| 90°    | 1.6    | 75.9   | 321.1  | 753.0  | 887.4  |
| 92.5°  | 1.6    | 36.4   | 226.2  | 569.5  | 672.3  |
| 95°    | 1.6    | 19.0   | 140.8  | 412.9  | 504.6  |
| 97.5°  | 1.6    | 11.1   | 85.4   | 292.6  | 370.1  |
| 100°   | 1.6    | 9.5    | 50.6   | 194.6  | 264.2  |
| 102.5° | 1.6    | 11.1   | 34.8   | 123.4  | 172.4  |
| 105°   | 1.6    | 11.1   | 28.5   | 80.7   | 113.9  |
| 107.5° | 3.2    | 11.1   | 25.3   | 60.1   | 79.1   |
| 110°   | 1.6    | 9.5    | 26.9   | 45.9   | 61.7   |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°  | 22.5° | 45°  | 67.5° | 90°  |
|--------|-----|-------|------|-------|------|
| 112.5° | 3.2 | 7.9   | 25.3 | 38.0  | 45.9 |
| 115°   | 1.6 | 6.3   | 22.1 | 36.4  | 38.0 |
| 117.5° | 3.2 | 4.7   | 17.4 | 36.4  | 38.0 |
| 120°   | 3.2 | 3.2   | 14.2 | 34.8  | 39.5 |
| 122.5° | 3.2 | 3.2   | 11.1 | 31.6  | 38.0 |
| 125°   | 1.6 | 3.2   | 9.5  | 23.7  | 33.2 |
| 127.5° | 3.2 | 3.2   | 7.9  | 19.0  | 25.3 |
| 130°   | 3.2 | 3.2   | 6.3  | 14.2  | 19.0 |
| 132.5° | 3.2 | 3.2   | 4.7  | 11.1  | 14.2 |
| 135°   | 3.2 | 3.2   | 3.2  | 7.9   | 11.1 |
| 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)