

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: P518271

Luminaire Tested: HVL8-8-LD4-3LO-35-UNV-C-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: P518271  
Test Lab: INNOVATION CENTER  
Issue Date: 4/27/2021  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: FAIL-SAFE  
Catalog Number: HVL8-8-LD4-3LO-35-UNV-C-EDD-90  
Description: 8 FOOT, 8 INCH WIDE, HVL LED LUMINAIRE, WITH 3500K, 90 CRI LEDS  
Light Source: -  
Ballast/Driver: -

**Summary**

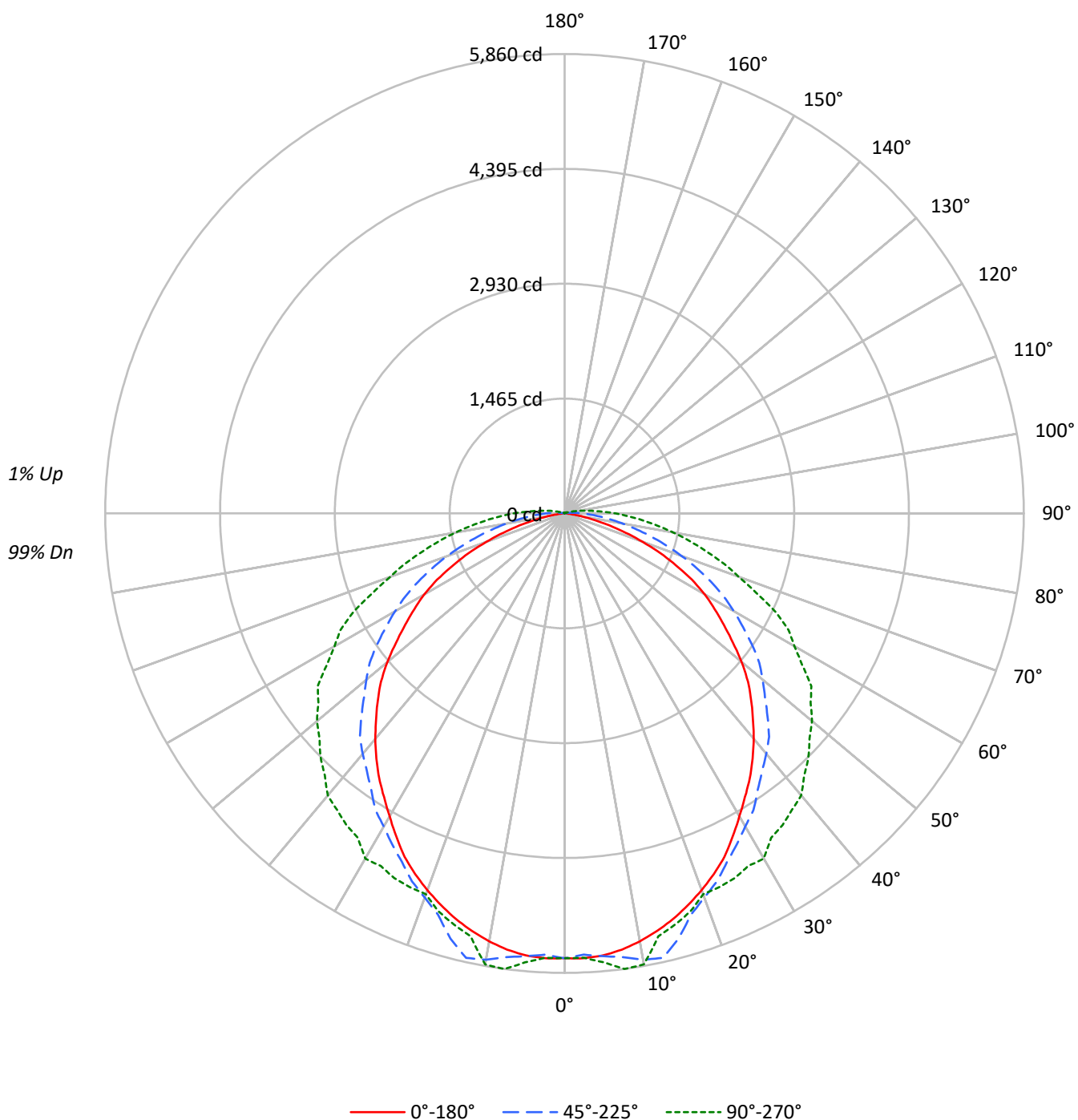
Lumens per Lamp: N/A  
Luminaire Lumens: 17090.0 lumens  
Efficiency: N/A  
Efficacy: 126.8 lumens/watt  
Spacing Criteria (0/90/45): 1.18 / 1.32 / 1.37  
Luminous Opening: Rectangular w/ Sides (W: 0.67' x L: 8' x H: 0.17')  
CIE Type: Direct  
  
Input Watts (W): 134.8  
Input Voltage (V): NR  
Input 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°  | 11449 | 11449 | 11449 |
| 5°  | 11444 | 11292 | 11394 |
| 10° | 11314 | 11459 | 11464 |
| 15° | 11129 | 11162 | 10640 |
| 20° | 10900 | 10469 | 10176 |
| 25° | 10656 | 10028 | 10240 |
| 30° | 10275 | 9675  | 10353 |
| 35° | 10010 | 9342  | 10169 |
| 40° | 9725  | 9094  | 10233 |
| 45° | 9418  | 8772  | 10048 |
| 50° | 9043  | 8434  | 9971  |
| 55° | 8478  | 8071  | 9966  |
| 60° | 8059  | 7569  | 9540  |
| 65° | 7179  | 6967  | 9236  |
| 70° | 5921  | 6179  | 8283  |
| 75° | 4298  | 5218  | 7561  |
| 80° | 2486  | 4249  | 6788  |
| 85° | 995   | 3247  | 5979  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 90°

Vertical Angle: 45°

Luminance: 10048 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 545.2   | 3.2       |
| 10°-20°   | 1552.7  | 9.1       |
| 20°-30°   | 2310.2  | 13.5      |
| 30°-40°   | 2776.9  | 16.2      |
| 40°-50°   | 2922.9  | 17.1      |
| 50°-60°   | 2712.1  | 15.9      |
| 60°-70°   | 2144.4  | 12.5      |
| 70°-80°   | 1309.8  | 7.7       |
| 80°-90°   | 570.7   | 3.3       |
| 90°-100°  | 177.7   | 1.0       |
| 100°-110° | 39.9    | 0.2       |
| 110°-120° | 16.0    | 0.1       |
| 120°-130° | 9.0     | 0.1       |
| 130°-140° | 2.4     | 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°    | 4408.2  | 25.8      |
| 0°-40°    | 7185.1  | 42.0      |
| 0°-60°    | 12820.0 | 75.0      |
| 0°-90°    | 16844.9 | 98.6      |
| 90°-120°  | 233.6   | 1.4       |
| 90°-150°  | 245.1   | 1.4       |
| 90°-180°  | 245.0   | 1.4       |
| 0°-180°   | 17090.0 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 5673 | 5673  | 5673 | 5673  | 5673 |      |
| 5°   | 5659 | 5648  | 5667 | 5731  | 5747 | 536  |
| 15°  | 5356 | 5562  | 5616 | 5430  | 5434 | 1509 |
| 25°  | 4832 | 5140  | 4906 | 5052  | 5134 | 2218 |
| 35°  | 4122 | 4236  | 4300 | 4691  | 4850 | 2576 |
| 45°  | 3369 | 3384  | 3662 | 4242  | 4401 | 2597 |
| 55°  | 2481 | 2522  | 2921 | 3560  | 3844 | 2229 |
| 65°  | 1570 | 1620  | 2058 | 2724  | 2971 | 1555 |
| 75°  | 594  | 787   | 1148 | 1764  | 1874 | 648  |
| 85°  | 53   | 185   | 447  | 868   | 996  | 82   |
| 90°  | 1    | 56    | 235  | 550   | 648  | 3    |
| 95°  | 1    | 14    | 103  | 302   | 369  | 1    |
| 105° | 1    | 8     | 21   | 59    | 83   | 2    |
| 115° | 1    | 5     | 16   | 27    | 28   | 2    |
| 125° | 1    | 2     | 7    | 17    | 24   | 2    |
| 135° | 2    | 2     | 2    | 6     | 8    | 1    |
| 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°     | 5673.0 | 5673.0 | 5673.0 | 5673.0 | 5673.0 |
| 2.5°   | 5679.9 | 5664.9 | 5633.7 | 5663.7 | 5671.8 |
| 5°     | 5659.1 | 5647.5 | 5667.2 | 5730.7 | 5746.9 |
| 7.5°   | 5611.7 | 5655.6 | 5707.6 | 5823.2 | 5860.2 |
| 10°    | 5541.2 | 5624.4 | 5780.4 | 5878.7 | 5840.5 |
| 12.5°  | 5455.7 | 5596.7 | 5805.8 | 5614.0 | 5525.0 |
| 15°    | 5356.3 | 5562.0 | 5616.3 | 5430.3 | 5433.7 |
| 17.5°  | 5239.6 | 5533.1 | 5365.6 | 5360.9 | 5327.4 |
| 20°    | 5113.6 | 5436.0 | 5214.2 | 5204.9 | 5169.1 |
| 22.5°  | 4978.4 | 5307.8 | 5080.1 | 5061.6 | 5158.7 |
| 25°    | 4831.7 | 5140.2 | 4905.6 | 5052.4 | 5134.4 |
| 27.5°  | 4647.9 | 4920.6 | 4760.0 | 4968.0 | 5070.9 |
| 30°    | 4461.9 | 4694.1 | 4610.9 | 4901.0 | 5083.6 |
| 32.5°  | 4287.4 | 4457.2 | 4488.4 | 4875.6 | 4905.6 |
| 35°    | 4122.1 | 4236.5 | 4300.1 | 4690.7 | 4850.1 |
| 37.5°  | 3940.7 | 3971.9 | 4140.6 | 4613.2 | 4766.9 |
| 40°    | 3755.8 | 3736.1 | 4006.5 | 4486.1 | 4698.8 |
| 42.5°  | 3557.0 | 3550.1 | 3864.4 | 4422.6 | 4528.9 |
| 45°    | 3368.6 | 3383.7 | 3662.2 | 4242.3 | 4400.6 |
| 47.5°  | 3175.7 | 3195.3 | 3470.3 | 4044.7 | 4241.1 |
| 50°    | 2951.5 | 2976.9 | 3299.3 | 3869.0 | 4122.1 |
| 52.5°  | 2708.8 | 2757.3 | 3132.9 | 3702.6 | 3958.0 |
| 55°    | 2481.1 | 2521.6 | 2921.4 | 3560.5 | 3843.6 |
| 57.5°  | 2273.1 | 2297.4 | 2703.0 | 3381.4 | 3595.1 |
| 60°    | 2068.6 | 2074.3 | 2497.3 | 3182.6 | 3387.1 |
| 62.5°  | 1834.0 | 1844.4 | 2285.8 | 2948.0 | 3221.9 |
| 65°    | 1570.5 | 1620.2 | 2058.2 | 2723.8 | 2971.1 |
| 67.5°  | 1324.3 | 1411.0 | 1825.9 | 2518.1 | 2647.5 |
| 70°    | 1060.9 | 1207.6 | 1598.2 | 2276.6 | 2367.9 |
| 72.5°  | 819.3  | 991.5  | 1364.8 | 2006.2 | 2134.4 |
| 75°    | 594.0  | 787.0  | 1147.5 | 1763.5 | 1874.4 |
| 77.5°  | 399.8  | 596.3  | 944.1  | 1495.4 | 1642.1 |
| 80°    | 239.2  | 435.7  | 762.7  | 1246.9 | 1412.2 |
| 82.5°  | 122.5  | 292.4  | 591.7  | 1045.8 | 1193.8 |
| 85°    | 53.2   | 184.9  | 447.2  | 867.9  | 996.1  |
| 87.5°  | 15.0   | 105.2  | 329.4  | 701.5  | 810.1  |
| 90°    | 1.2    | 55.5   | 234.6  | 550.1  | 648.3  |
| 92.5°  | 1.2    | 26.6   | 165.3  | 416.0  | 491.1  |
| 95°    | 1.2    | 13.9   | 102.9  | 301.6  | 368.6  |
| 97.5°  | 1.2    | 8.1    | 62.4   | 213.8  | 270.4  |
| 100°   | 1.2    | 6.9    | 37.0   | 142.1  | 193.0  |
| 102.5° | 1.2    | 8.1    | 25.4   | 90.1   | 126.0  |
| 105°   | 1.2    | 8.1    | 20.8   | 58.9   | 83.2   |
| 107.5° | 2.3    | 8.1    | 18.5   | 43.9   | 57.8   |
| 110°   | 1.2    | 6.9    | 19.6   | 33.5   | 45.1   |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°  | 22.5° | 45°  | 67.5° | 90°  |
|--------|-----|-------|------|-------|------|
| 112.5° | 2.3 | 5.8   | 18.5 | 27.7  | 33.5 |
| 115°   | 1.2 | 4.6   | 16.2 | 26.6  | 27.7 |
| 117.5° | 2.3 | 3.5   | 12.7 | 26.6  | 27.7 |
| 120°   | 2.3 | 2.3   | 10.4 | 25.4  | 28.9 |
| 122.5° | 2.3 | 2.3   | 8.1  | 23.1  | 27.7 |
| 125°   | 1.2 | 2.3   | 6.9  | 17.3  | 24.3 |
| 127.5° | 2.3 | 2.3   | 5.8  | 13.9  | 18.5 |
| 130°   | 2.3 | 2.3   | 4.6  | 10.4  | 13.9 |
| 132.5° | 2.3 | 2.3   | 3.5  | 8.1   | 10.4 |
| 135°   | 2.3 | 2.3   | 2.3  | 5.8   | 8.1  |
| 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)