

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: P517902

Luminaire Tested: HVL8-2-LD4-1STD-30-UNV-O-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: P517902  
Test Lab: INNOVATION CENTER  
Issue Date: 4/27/2021  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: FAIL-SAFE  
Catalog Number: HVL8-2-LD4-1STD-30-UNV-O-EDD  
Description: 2 FOOT, 8 INCH WIDE, HVL LED LUMINAIRE, WITH 3000K, 80 CRI LEDS  
Light Source: -  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 1373.9 lumens  
Efficiency: N/A  
Efficacy: 84.3 lumens/watt  
Spacing Criteria (0/90/45): 1.25 / 1.27 / 1.38  
Luminous Opening: Rectangular w/ Sides (W: 0.67' x L: 2' x H: 0.17')  
CIE Type: Direct

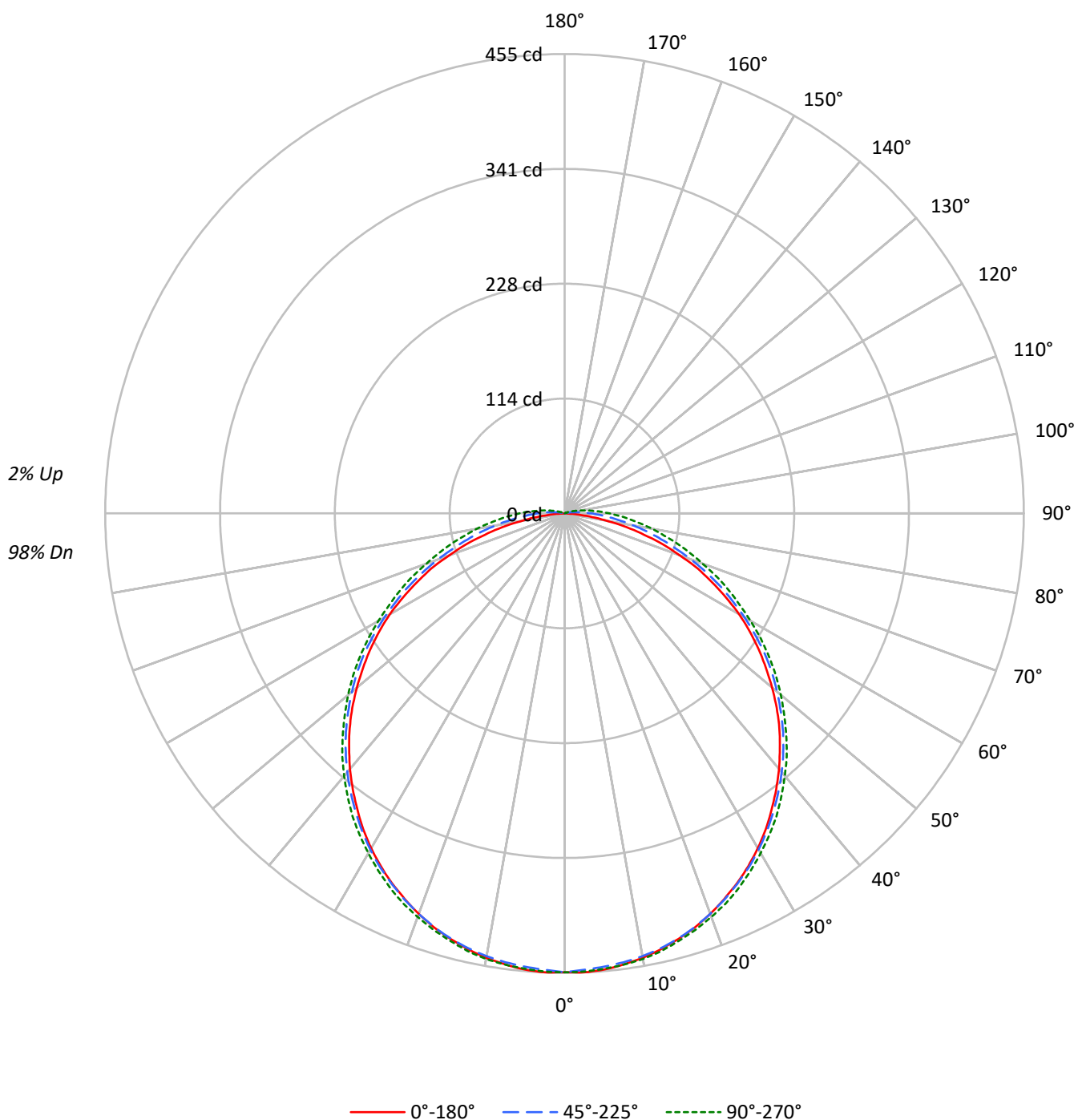
Input Watts (W): 16.3  
Input Voltage (V): NR  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT

| 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  |
| RCR |     |     |     |     |     |     |     |     |     |     |     |  |     |     |     |  |     |
| 0   | 119 | 119 | 119 | 119 | 116 | 116 | 116 | 116 | 110 | 110 | 110 |  | 105 | 105 | 105 |  | 101 |
| 1   | 108 | 102 | 98  | 94  | 105 | 100 | 96  | 92  | 95  | 92  | 89  |  | 91  | 88  | 86  |  | 87  |
| 2   | 98  | 89  | 82  | 76  | 95  | 87  | 80  | 75  | 83  | 77  | 73  |  | 79  | 75  | 71  |  | 76  |
| 3   | 89  | 78  | 69  | 63  | 86  | 76  | 68  | 62  | 73  | 66  | 61  |  | 70  | 64  | 59  |  | 67  |
| 4   | 81  | 69  | 60  | 53  | 79  | 67  | 59  | 52  | 65  | 57  | 52  |  | 62  | 56  | 51  |  | 60  |
| 5   | 75  | 61  | 52  | 45  | 72  | 60  | 52  | 45  | 58  | 50  | 44  |  | 56  | 49  | 44  |  | 54  |
| 6   | 69  | 55  | 46  | 40  | 67  | 54  | 46  | 39  | 52  | 45  | 39  |  | 50  | 44  | 38  |  | 49  |
| 7   | 64  | 50  | 41  | 35  | 62  | 49  | 41  | 35  | 47  | 40  | 34  |  | 46  | 39  | 34  |  | 44  |
| 8   | 59  | 46  | 37  | 31  | 58  | 45  | 37  | 31  | 43  | 36  | 31  |  | 42  | 35  | 30  |  | 41  |
| 9   | 55  | 42  | 34  | 28  | 54  | 41  | 33  | 28  | 40  | 33  | 28  |  | 39  | 32  | 27  |  | 38  |
| 10  | 52  | 39  | 31  | 25  | 51  | 38  | 30  | 25  | 37  | 30  | 25  |  | 36  | 29  | 25  |  | 35  |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 3668 | 3668 | 3668 |
| 5°  | 3648 | 3578 | 3590 |
| 10° | 3610 | 3505 | 3518 |
| 15° | 3566 | 3426 | 3432 |
| 20° | 3520 | 3339 | 3348 |
| 25° | 3466 | 3249 | 3263 |
| 30° | 3405 | 3156 | 3166 |
| 35° | 3332 | 3053 | 3070 |
| 40° | 3255 | 2946 | 2958 |
| 45° | 3172 | 2829 | 2838 |
| 50° | 3069 | 2695 | 2707 |
| 55° | 2954 | 2549 | 2565 |
| 60° | 2820 | 2363 | 2397 |
| 65° | 2616 | 2156 | 2231 |
| 70° | 2333 | 1914 | 2039 |
| 75° | 1944 | 1649 | 1864 |
| 80° | 1392 | 1389 | 1703 |
| 85° | 669  | 1126 | 1551 |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 3172 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 43.0   | 3.1       |
| 10°-20°   | 123.4  | 9.0       |
| 20°-30°   | 187.2  | 13.6      |
| 30°-40°   | 226.3  | 16.5      |
| 40°-50°   | 236.1  | 17.2      |
| 50°-60°   | 215.9  | 15.7      |
| 60°-70°   | 168.3  | 12.3      |
| 70°-80°   | 105.3  | 7.7       |
| 80°-90°   | 47.8   | 3.5       |
| 90°-100°  | 16.0   | 1.2       |
| 100°-110° | 4.0    | 0.3       |
| 110°-120° | 0.6    | 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°    | 353.5  | 25.7      |
| 0°-40°    | 579.8  | 42.2      |
| 0°-60°    | 1031.9 | 75.1      |
| 0°-90°    | 1353.3 | 98.5      |
| 90°-120°  | 20.7   | 1.5       |
| 90°-150°  | 20.7   | 1.5       |
| 90°-180°  | 21.0   | 1.5       |
| 0°-180°   | 1373.9 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°  | 22.5° | 45° | 67.5° | 90° | Flux |
|------|-----|-------|-----|-------|-----|------|
| 0°   | 454 | 454   | 454 | 454   | 454 |      |
| 5°   | 454 | 453   | 451 | 453   | 453 | 43   |
| 15°  | 436 | 437   | 436 | 438   | 438 | 123  |
| 25°  | 404 | 404   | 405 | 408   | 409 | 186  |
| 35°  | 358 | 359   | 361 | 365   | 366 | 224  |
| 45°  | 301 | 304   | 306 | 309   | 311 | 232  |
| 55°  | 235 | 238   | 242 | 246   | 247 | 210  |
| 65°  | 161 | 164   | 170 | 177   | 179 | 160  |
| 75°  | 82  | 87    | 99  | 111   | 116 | 87   |
| 85°  | 14  | 26    | 45  | 59    | 65  | 18   |
| 90°  | 0   | 10    | 26  | 40    | 45  | 1    |
| 95°  | 0   | 3     | 14  | 25    | 29  | 0    |
| 105° | 0   | 0     | 2   | 7     | 9   | 0    |
| 115° | 0   | 0     | 0   | 1     | 2   | 0    |
| 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°     | 454.4 | 454.4 | 454.4 | 454.4 | 454.4 |
| 2.5°   | 455.0 | 454.3 | 452.3 | 454.3 | 454.2 |
| 5°     | 453.5 | 452.6 | 450.6 | 452.7 | 452.7 |
| 7.5°   | 450.5 | 450.2 | 448.3 | 450.8 | 450.8 |
| 10°    | 446.9 | 446.8 | 445.3 | 448.0 | 448.1 |
| 12.5°  | 442.0 | 442.4 | 441.0 | 443.6 | 443.9 |
| 15°    | 436.2 | 437.0 | 435.8 | 438.3 | 438.2 |
| 17.5°  | 429.9 | 430.3 | 429.5 | 432.3 | 432.2 |
| 20°    | 422.1 | 422.6 | 422.0 | 424.9 | 425.2 |
| 22.5°  | 413.4 | 414.2 | 414.0 | 417.0 | 417.9 |
| 25°    | 404.2 | 404.5 | 404.9 | 408.4 | 409.0 |
| 27.5°  | 394.0 | 394.6 | 395.3 | 398.4 | 399.1 |
| 30°    | 382.9 | 383.7 | 384.6 | 387.8 | 388.7 |
| 32.5°  | 371.1 | 371.9 | 373.0 | 377.2 | 377.6 |
| 35°    | 357.8 | 359.4 | 360.9 | 364.6 | 366.1 |
| 37.5°  | 344.5 | 346.6 | 348.0 | 351.8 | 353.0 |
| 40°    | 330.5 | 332.5 | 334.8 | 338.8 | 339.6 |
| 42.5°  | 315.8 | 318.2 | 320.8 | 324.5 | 325.8 |
| 45°    | 301.0 | 303.7 | 306.2 | 309.2 | 310.7 |
| 47.5°  | 285.1 | 287.7 | 290.7 | 294.2 | 295.1 |
| 50°    | 268.6 | 271.7 | 274.9 | 278.1 | 279.8 |
| 52.5°  | 251.6 | 255.4 | 259.0 | 262.5 | 264.1 |
| 55°    | 234.9 | 237.7 | 242.1 | 245.6 | 247.3 |
| 57.5°  | 217.6 | 219.9 | 223.9 | 229.7 | 230.5 |
| 60°    | 199.9 | 202.0 | 206.1 | 210.8 | 212.8 |
| 62.5°  | 180.4 | 183.3 | 187.6 | 193.6 | 195.3 |
| 65°    | 161.4 | 164.2 | 169.9 | 176.7 | 179.4 |
| 67.5°  | 143.1 | 144.1 | 151.4 | 158.4 | 162.9 |
| 70°    | 121.5 | 125.1 | 133.6 | 142.3 | 145.7 |
| 72.5°  | 102.8 | 106.5 | 115.8 | 126.0 | 130.3 |
| 75°    | 81.7  | 86.8  | 99.4  | 111.3 | 115.5 |
| 77.5°  | 63.2  | 68.8  | 84.4  | 96.4  | 101.2 |
| 80°    | 44.1  | 52.8  | 69.8  | 83.3  | 88.6  |
| 82.5°  | 27.7  | 38.5  | 56.7  | 70.8  | 75.4  |
| 85°    | 14.1  | 26.1  | 44.9  | 59.3  | 64.6  |
| 87.5°  | 3.7   | 16.9  | 34.9  | 48.7  | 54.1  |
| 90°    | 0.1   | 9.7   | 26.5  | 39.7  | 44.6  |
| 92.5°  | 0.1   | 5.5   | 19.7  | 31.6  | 36.5  |
| 95°    | 0.1   | 2.6   | 13.7  | 24.9  | 28.7  |
| 97.5°  | 0.1   | 1.1   | 9.4   | 18.7  | 22.6  |
| 100°   | 0.1   | 0.5   | 6.0   | 13.6  | 16.9  |
| 102.5° | 0.2   | 0.3   | 3.7   | 9.7   | 12.4  |
| 105°   | 0.2   | 0.3   | 2.2   | 6.6   | 8.9   |
| 107.5° | 0.2   | 0.3   | 1.3   | 4.5   | 6.1   |
| 110°   | 0.3   | 0.3   | 0.7   | 2.8   | 4.1   |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°  | 22.5° | 45° | 67.5° | 90° |
|--------|-----|-------|-----|-------|-----|
| 112.5° | 0.3 | 0.3   | 0.4 | 1.8   | 2.7 |
| 115°   | 0.3 | 0.3   | 0.4 | 1.2   | 1.7 |
| 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)