

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: P517623

Luminaire Tested: HVL12-8-LD4-1STD-50-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: P517623  
Test Lab: INNOVATION CENTER  
Issue Date: 4/27/2021  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: FAIL-SAFE  
Catalog Number: HVL12-8-LD4-1STD-50-UNV-C-EDD-90  
Description: 8 FOOT, 12 INCH WIDE, HVL LED LUMINAIRE, WITH 5000K, 90 CRI LEDS  
Light Source: -  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 7883.0 lumens  
Efficiency: N/A  
Efficacy: 117.7 lumens/watt  
Spacing Criteria (0/90/45): 1.18 / 1.32 / 1.37  
Luminous Opening: Rectangular w/ Sides (W: 1' x L: 8' x H: 0.17')  
CIE Type: Direct

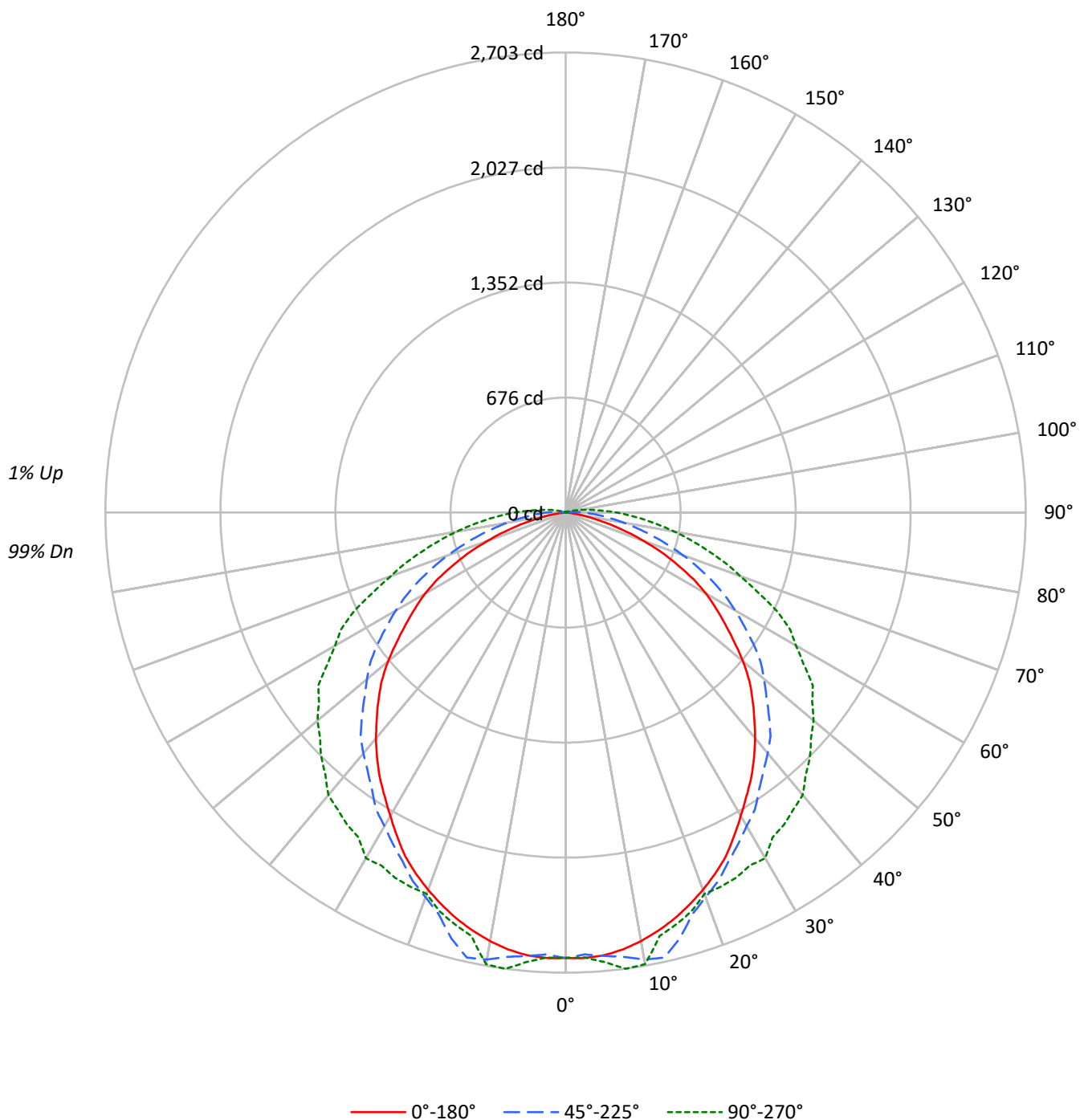
Input Watts (W): 67  
Input Voltage (V): NR  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT

| 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 |  | 99 |
| 1   | 108 | 103 | 98  | 94  | 105 | 100 | 96  | 92  | 96  | 92  | 89  |  | 91  | 89  | 86  |  | 81 |
| 2   | 98  | 89  | 82  | 76  | 95  | 87  | 80  | 75  | 83  | 78  | 73  |  | 80  | 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  | 51  |  | 62  | 56  | 51  |  | 47 |
| 5   | 75  | 61  | 52  | 45  | 72  | 60  | 51  | 45  | 58  | 50  | 44  |  | 56  | 49  | 44  |  | 41 |
| 6   | 69  | 55  | 46  | 39  | 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°  | 3521 | 3521 | 3521 |
| 5°  | 3519 | 3490 | 3529 |
| 10° | 3479 | 3560 | 3576 |
| 15° | 3422 | 3485 | 3342 |
| 20° | 3352 | 3285 | 3219 |
| 25° | 3277 | 3164 | 3262 |
| 30° | 3160 | 3069 | 3323 |
| 35° | 3078 | 2981 | 3291 |
| 40° | 2991 | 2921 | 3340 |
| 45° | 2896 | 2838 | 3310 |
| 50° | 2781 | 2751 | 3320 |
| 55° | 2607 | 2658 | 3359 |
| 60° | 2478 | 2521 | 3262 |
| 65° | 2208 | 2353 | 3214 |
| 70° | 1821 | 2126 | 2947 |
| 75° | 1322 | 1841 | 2771 |
| 80° | 764  | 1556 | 2594 |
| 85° | 305  | 1266 | 2442 |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 90°

Vertical Angle: 55°

Luminance: 3359 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 251.5  | 3.2       |
| 10°-20°   | 716.2  | 9.1       |
| 20°-30°   | 1065.6 | 13.5      |
| 30°-40°   | 1280.9 | 16.2      |
| 40°-50°   | 1348.2 | 17.1      |
| 50°-60°   | 1251.0 | 15.9      |
| 60°-70°   | 989.1  | 12.5      |
| 70°-80°   | 604.2  | 7.7       |
| 80°-90°   | 263.2  | 3.3       |
| 90°-100°  | 81.9   | 1.0       |
| 100°-110° | 18.4   | 0.2       |
| 110°-120° | 7.4    | 0.1       |
| 120°-130° | 4.2    | 0.1       |
| 130°-140° | 1.1    | 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°    | 2033.3 | 25.8      |
| 0°-40°    | 3314.2 | 42.0      |
| 0°-60°    | 5913.4 | 75.0      |
| 0°-90°    | 7769.9 | 98.6      |
| 90°-120°  | 107.8  | 1.4       |
| 90°-150°  | 113.1  | 1.4       |
| 90°-180°  | 113.0  | 1.4       |
| 0°-180°   | 7883.0 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 2617 | 2617  | 2617 | 2617  | 2617 |      |
| 5°   | 2610 | 2605  | 2614 | 2643  | 2651 | 247  |
| 15°  | 2471 | 2566  | 2591 | 2505  | 2506 | 696  |
| 25°  | 2229 | 2371  | 2263 | 2330  | 2368 | 1023 |
| 35°  | 1901 | 1954  | 1984 | 2164  | 2237 | 1188 |
| 45°  | 1554 | 1561  | 1689 | 1957  | 2030 | 1198 |
| 55°  | 1144 | 1163  | 1348 | 1642  | 1773 | 1028 |
| 65°  | 724  | 747   | 949  | 1256  | 1370 | 717  |
| 75°  | 274  | 363   | 529  | 813   | 865  | 299  |
| 85°  | 24   | 85    | 206  | 400   | 460  | 38   |
| 90°  | 0    | 26    | 108  | 254   | 299  | 1    |
| 95°  | 0    | 6     | 47   | 139   | 170  | 0    |
| 105° | 0    | 4     | 10   | 27    | 38   | 1    |
| 115° | 0    | 2     | 8    | 12    | 13   | 1    |
| 125° | 0    | 1     | 3    | 8     | 11   | 1    |
| 135° | 1    | 1     | 1    | 3     | 4    | 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°     | 2616.7 | 2616.7 | 2616.7 | 2616.7 | 2616.7 |
| 2.5°   | 2619.9 | 2613.0 | 2598.6 | 2612.5 | 2616.2 |
| 5°     | 2610.3 | 2605.0 | 2614.1 | 2643.4 | 2650.8 |
| 7.5°   | 2588.5 | 2608.7 | 2632.7 | 2686.0 | 2703.1 |
| 10°    | 2556.0 | 2594.3 | 2666.3 | 2711.6 | 2694.0 |
| 12.5°  | 2516.5 | 2581.5 | 2678.0 | 2589.5 | 2548.5 |
| 15°    | 2470.7 | 2565.6 | 2590.6 | 2504.8 | 2506.4 |
| 17.5°  | 2416.8 | 2552.2 | 2474.9 | 2472.8 | 2457.3 |
| 20°    | 2358.7 | 2507.5 | 2405.1 | 2400.8 | 2384.3 |
| 22.5°  | 2296.4 | 2448.3 | 2343.3 | 2334.7 | 2379.5 |
| 25°    | 2228.7 | 2371.0 | 2262.8 | 2330.5 | 2368.3 |
| 27.5°  | 2143.9 | 2269.7 | 2195.6 | 2291.6 | 2339.0 |
| 30°    | 2058.1 | 2165.2 | 2126.9 | 2260.7 | 2344.9 |
| 32.5°  | 1977.6 | 2056.0 | 2070.4 | 2248.9 | 2262.8 |
| 35°    | 1901.4 | 1954.1 | 1983.5 | 2163.6 | 2237.2 |
| 37.5°  | 1817.7 | 1832.1 | 1909.9 | 2127.9 | 2198.8 |
| 40°    | 1732.4 | 1723.3 | 1848.1 | 2069.3 | 2167.4 |
| 42.5°  | 1640.7 | 1637.5 | 1782.5 | 2040.0 | 2089.0 |
| 45°    | 1553.8 | 1560.8 | 1689.2 | 1956.8 | 2029.8 |
| 47.5°  | 1464.8 | 1473.9 | 1600.7 | 1865.7 | 1956.3 |
| 50°    | 1361.4 | 1373.1 | 1521.8 | 1784.6 | 1901.4 |
| 52.5°  | 1249.5 | 1271.8 | 1445.1 | 1707.9 | 1825.7 |
| 55°    | 1144.5 | 1163.1 | 1347.5 | 1642.3 | 1772.9 |
| 57.5°  | 1048.5 | 1059.7 | 1246.8 | 1559.7 | 1658.3 |
| 60°    | 954.2  | 956.8  | 1151.9 | 1468.0 | 1562.4 |
| 62.5°  | 845.9  | 850.7  | 1054.4 | 1359.8 | 1486.1 |
| 65°    | 724.4  | 747.3  | 949.4  | 1256.4 | 1370.5 |
| 67.5°  | 610.9  | 650.9  | 842.2  | 1161.5 | 1221.2 |
| 70°    | 489.3  | 557.0  | 737.2  | 1050.1 | 1092.2 |
| 72.5°  | 377.9  | 457.4  | 629.5  | 925.4  | 984.5  |
| 75°    | 274.0  | 363.0  | 529.3  | 813.4  | 864.6  |
| 77.5°  | 184.4  | 275.1  | 435.5  | 689.8  | 757.5  |
| 80°    | 110.3  | 201.0  | 351.8  | 575.2  | 651.4  |
| 82.5°  | 56.5   | 134.9  | 272.9  | 482.4  | 550.6  |
| 85°    | 24.5   | 85.3   | 206.3  | 400.3  | 459.5  |
| 87.5°  | 6.9    | 48.5   | 151.9  | 323.6  | 373.7  |
| 90°    | 0.5    | 25.6   | 108.2  | 253.7  | 299.0  |
| 92.5°  | 0.5    | 12.3   | 76.2   | 191.9  | 226.5  |
| 95°    | 0.5    | 6.4    | 47.4   | 139.1  | 170.0  |
| 97.5°  | 0.5    | 3.7    | 28.8   | 98.6   | 124.7  |
| 100°   | 0.5    | 3.2    | 17.1   | 65.6   | 89.0   |
| 102.5° | 0.5    | 3.7    | 11.7   | 41.6   | 58.1   |
| 105°   | 0.5    | 3.7    | 9.6    | 27.2   | 38.4   |
| 107.5° | 1.1    | 3.7    | 8.5    | 20.3   | 26.7   |
| 110°   | 0.5    | 3.2    | 9.1    | 15.5   | 20.8   |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°  | 22.5° | 45° | 67.5° | 90°  |
|--------|-----|-------|-----|-------|------|
| 112.5° | 1.1 | 2.7   | 8.5 | 12.8  | 15.5 |
| 115°   | 0.5 | 2.1   | 7.5 | 12.3  | 12.8 |
| 117.5° | 1.1 | 1.6   | 5.9 | 12.3  | 12.8 |
| 120°   | 1.1 | 1.1   | 4.8 | 11.7  | 13.3 |
| 122.5° | 1.1 | 1.1   | 3.7 | 10.7  | 12.8 |
| 125°   | 0.5 | 1.1   | 3.2 | 8.0   | 11.2 |
| 127.5° | 1.1 | 1.1   | 2.7 | 6.4   | 8.5  |
| 130°   | 1.1 | 1.1   | 2.1 | 4.8   | 6.4  |
| 132.5° | 1.1 | 1.1   | 1.6 | 3.7   | 4.8  |
| 135°   | 1.1 | 1.1   | 1.1 | 2.7   | 3.7  |
| 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)