

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: P517451

Luminaire Tested: HVL12-4-LD4-1LO-30-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: P517451  
Test Lab: INNOVATION CENTER  
Issue Date: 4/27/2021  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: FAIL-SAFE  
Catalog Number: HVL12-4-LD4-1LO-30-UNV-C-EDD-90  
Description: 4 FOOT, 12 INCH WIDE, HVL LED LUMINAIRE, WITH 3000K, 90 CRI LEDS  
Light Source: -  
Ballast/Driver: -

**Summary**

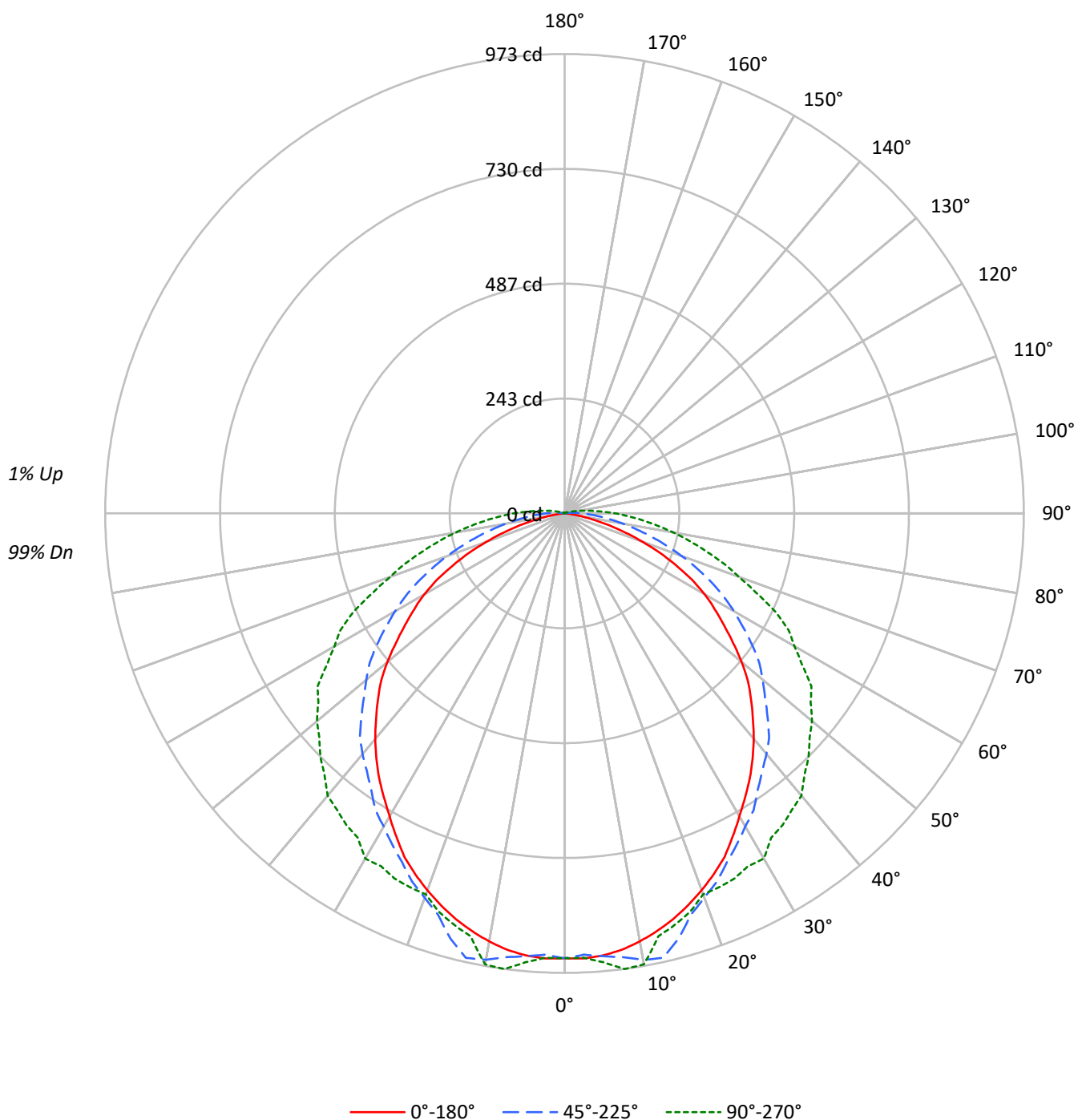
Lumens per Lamp: N/A  
Luminaire Lumens: 2838.0 lumens  
Efficiency: N/A  
Efficacy: 120.3 lumens/watt  
Spacing Criteria (0/90/45): 1.18 / 1.32 / 1.36  
Luminous Opening: Rectangular w/ Sides (W: 1' x L: 4' x H: 0.17')  
CIE Type: Direct  
  
Input Watts (W): 23.6  
Input Voltage (V): NR  
Input Current (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°  | 2535 | 2535 | 2535 |
| 5°  | 2529 | 2510 | 2541 |
| 10° | 2496 | 2556 | 2575 |
| 15° | 2451 | 2500 | 2406 |
| 20° | 2396 | 2353 | 2318 |
| 25° | 2337 | 2263 | 2349 |
| 30° | 2248 | 2193 | 2393 |
| 35° | 2185 | 2126 | 2369 |
| 40° | 2117 | 2080 | 2405 |
| 45° | 2044 | 2017 | 2384 |
| 50° | 1955 | 1951 | 2391 |
| 55° | 1824 | 1880 | 2419 |
| 60° | 1724 | 1778 | 2349 |
| 65° | 1524 | 1654 | 2314 |
| 70° | 1244 | 1486 | 2122 |
| 75° | 887  | 1279 | 1995 |
| 80° | 498  | 1070 | 1868 |
| 85° | 184  | 855  | 1758 |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 90°

Vertical Angle: 55°

Luminance: 2419 cd/sqm

TEST NUMBER: P517451

CATALOG NUMBER: HVL12-4-LD4-1LO-30-UNV-C-EDD-90

**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 90.5   | 3.2       |
| 10°-20°   | 257.8  | 9.1       |
| 20°-30°   | 383.6  | 13.5      |
| 30°-40°   | 461.1  | 16.2      |
| 40°-50°   | 485.4  | 17.1      |
| 50°-60°   | 450.4  | 15.9      |
| 60°-70°   | 356.1  | 12.5      |
| 70°-80°   | 217.5  | 7.7       |
| 80°-90°   | 94.8   | 3.3       |
| 90°-100°  | 29.5   | 1.0       |
| 100°-110° | 6.6    | 0.2       |
| 110°-120° | 2.7    | 0.1       |
| 120°-130° | 1.5    | 0.1       |
| 130°-140° | 0.4    | 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°    | 732.0  | 25.8      |
| 0°-40°    | 1193.2 | 42.0      |
| 0°-60°    | 2128.9 | 75.0      |
| 0°-90°    | 2797.3 | 98.6      |
| 90°-120°  | 38.8   | 1.4       |
| 90°-150°  | 40.7   | 1.4       |
| 90°-180°  | 41.0   | 1.4       |
| 0°-180°   | 2838.0 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°  | 22.5° | 45° | 67.5° | 90° | Flux |
|------|-----|-------|-----|-------|-----|------|
| 0°   | 942 | 942   | 942 | 942   | 942 |      |
| 5°   | 940 | 938   | 941 | 952   | 954 | 89   |
| 15°  | 890 | 924   | 933 | 902   | 902 | 251  |
| 25°  | 802 | 854   | 815 | 839   | 853 | 368  |
| 35°  | 684 | 704   | 714 | 779   | 805 | 428  |
| 45°  | 559 | 562   | 608 | 704   | 731 | 431  |
| 55°  | 412 | 419   | 485 | 591   | 638 | 370  |
| 65°  | 261 | 269   | 342 | 452   | 493 | 258  |
| 75°  | 99  | 131   | 191 | 293   | 311 | 108  |
| 85°  | 9   | 31    | 74  | 144   | 165 | 14   |
| 90°  | 0   | 9     | 39  | 91    | 108 | 0    |
| 95°  | 0   | 2     | 17  | 50    | 61  | 0    |
| 105° | 0   | 1     | 4   | 10    | 14  | 0    |
| 115° | 0   | 1     | 3   | 4     | 5   | 0    |
| 125° | 0   | 0     | 1   | 3     | 4   | 0    |
| 135° | 0   | 0     | 0   | 1     | 1   | 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    |

TEST NUMBER: P517451

CATALOG NUMBER: HVL12-4-LD4-1LO-30-UNV-C-EDD-90

**CANDELA DISTRIBUTION (FULL):**

|        | 0°    | 22.5° | 45°   | 67.5° | 90°   |
|--------|-------|-------|-------|-------|-------|
| 0°     | 942.1 | 942.1 | 942.1 | 942.1 | 942.1 |
| 2.5°   | 943.2 | 940.7 | 935.5 | 940.5 | 941.9 |
| 5°     | 939.8 | 937.8 | 941.1 | 951.7 | 954.3 |
| 7.5°   | 931.9 | 939.2 | 947.8 | 967.0 | 973.2 |
| 10°    | 920.2 | 934.0 | 959.9 | 976.2 | 969.9 |
| 12.5°  | 906.0 | 929.4 | 964.1 | 932.3 | 917.5 |
| 15°    | 889.5 | 923.6 | 932.7 | 901.8 | 902.3 |
| 17.5°  | 870.1 | 918.8 | 891.0 | 890.2 | 884.7 |
| 20°    | 849.2 | 902.7 | 865.9 | 864.3 | 858.4 |
| 22.5°  | 826.7 | 881.4 | 843.6 | 840.5 | 856.7 |
| 25°    | 802.4 | 853.6 | 814.6 | 839.0 | 852.6 |
| 27.5°  | 771.8 | 817.1 | 790.5 | 825.0 | 842.1 |
| 30°    | 740.9 | 779.5 | 765.7 | 813.9 | 844.2 |
| 32.5°  | 712.0 | 740.2 | 745.4 | 809.6 | 814.6 |
| 35°    | 684.5 | 703.5 | 714.1 | 778.9 | 805.4 |
| 37.5°  | 654.4 | 659.6 | 687.6 | 766.1 | 791.6 |
| 40°    | 623.7 | 620.4 | 665.3 | 745.0 | 780.3 |
| 42.5°  | 590.7 | 589.5 | 641.7 | 734.4 | 752.1 |
| 45°    | 559.4 | 561.9 | 608.1 | 704.5 | 730.8 |
| 47.5°  | 527.4 | 530.6 | 576.3 | 671.7 | 704.3 |
| 50°    | 490.1 | 494.3 | 547.9 | 642.5 | 684.5 |
| 52.5°  | 449.8 | 457.9 | 520.3 | 614.9 | 657.3 |
| 55°    | 412.0 | 418.7 | 485.1 | 591.3 | 638.3 |
| 57.5°  | 377.5 | 381.5 | 448.9 | 561.5 | 597.0 |
| 60°    | 343.5 | 344.5 | 414.7 | 528.5 | 562.5 |
| 62.5°  | 304.6 | 306.3 | 379.6 | 489.5 | 535.0 |
| 65°    | 260.8 | 269.1 | 341.8 | 452.3 | 493.4 |
| 67.5°  | 219.9 | 234.3 | 303.2 | 418.2 | 439.7 |
| 70°    | 176.2 | 200.5 | 265.4 | 378.1 | 393.2 |
| 72.5°  | 136.1 | 164.7 | 226.6 | 333.1 | 354.4 |
| 75°    | 98.6  | 130.7 | 190.6 | 292.8 | 311.3 |
| 77.5°  | 66.4  | 99.0  | 156.8 | 248.3 | 272.7 |
| 80°    | 39.7  | 72.3  | 126.7 | 207.1 | 234.5 |
| 82.5°  | 20.3  | 48.6  | 98.3  | 173.7 | 198.2 |
| 85°    | 8.8   | 30.7  | 74.3  | 144.1 | 165.4 |
| 87.5°  | 2.5   | 17.5  | 54.7  | 116.5 | 134.5 |
| 90°    | 0.2   | 9.2   | 39.0  | 91.3  | 107.7 |
| 92.5°  | 0.2   | 4.4   | 27.4  | 69.1  | 81.6  |
| 95°    | 0.2   | 2.3   | 17.1  | 50.1  | 61.2  |
| 97.5°  | 0.2   | 1.3   | 10.4  | 35.5  | 44.9  |
| 100°   | 0.2   | 1.2   | 6.1   | 23.6  | 32.0  |
| 102.5° | 0.2   | 1.3   | 4.2   | 15.0  | 20.9  |
| 105°   | 0.2   | 1.3   | 3.5   | 9.8   | 13.8  |
| 107.5° | 0.4   | 1.3   | 3.1   | 7.3   | 9.6   |
| 110°   | 0.2   | 1.2   | 3.3   | 5.6   | 7.5   |

TEST NUMBER: P517451

CATALOG NUMBER: HVL12-4-LD4-1LO-30-UNV-C-EDD-90

**CANDELA DISTRIBUTION (continued):**

|        | 0°  | 22.5° | 45° | 67.5° | 90° |
|--------|-----|-------|-----|-------|-----|
| 112.5° | 0.4 | 1.0   | 3.1 | 4.6   | 5.6 |
| 115°   | 0.2 | 0.8   | 2.7 | 4.4   | 4.6 |
| 117.5° | 0.4 | 0.6   | 2.1 | 4.4   | 4.6 |
| 120°   | 0.4 | 0.4   | 1.7 | 4.2   | 4.8 |
| 122.5° | 0.4 | 0.4   | 1.3 | 3.8   | 4.6 |
| 125°   | 0.2 | 0.4   | 1.2 | 2.9   | 4.0 |
| 127.5° | 0.4 | 0.4   | 1.0 | 2.3   | 3.1 |
| 130°   | 0.4 | 0.4   | 0.8 | 1.7   | 2.3 |
| 132.5° | 0.4 | 0.4   | 0.6 | 1.3   | 1.7 |
| 135°   | 0.4 | 0.4   | 0.4 | 1.0   | 1.3 |
| 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)