

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: P517211

Luminaire Tested: HVL12-1-LD4-2LO-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: P517211  
Test Lab: INNOVATION CENTER  
Issue Date: 4/27/2021  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: FAIL-SAFE  
Catalog Number: HVL12-1-LD4-2LO-30-UNV-C-EDD-90  
Description: 1 FOOT, 12 INCH WIDE, HVL LED LUMINAIRE, WITH 3000K, 90 CRI LEDS  
Light Source: -  
Ballast/Driver: -

**Summary**

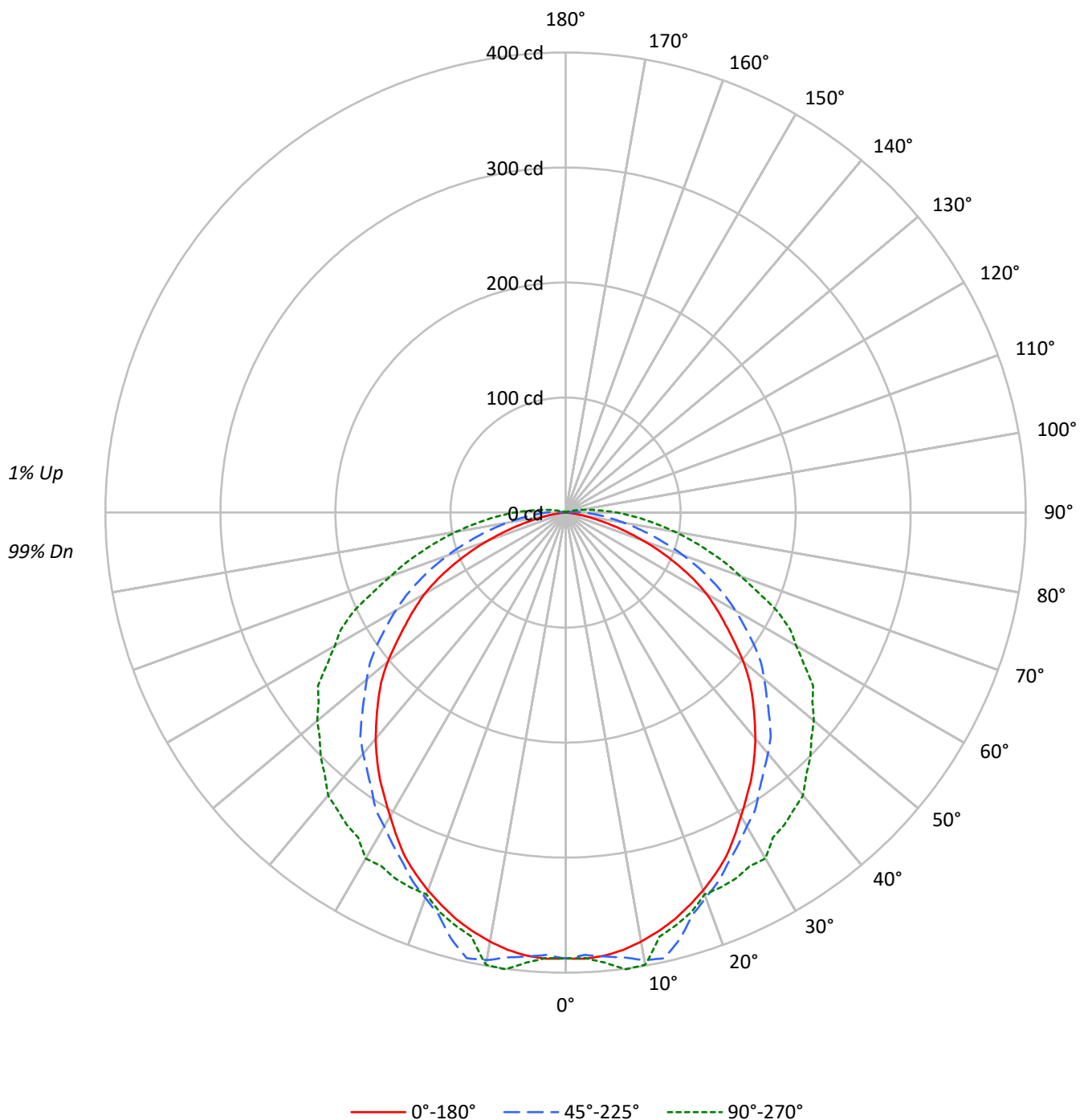
Lumens per Lamp: N/A  
Luminaire Lumens: 1168.0 lumens  
Efficiency: N/A  
Efficacy: 99.0 lumens/watt  
Spacing Criteria (0/90/45): 1.18 / 1.32 / 1.37  
Luminous Opening: Rectangular w/ Sides (W: 1' x L: 1' x H: 0.17')  
CIE Type: Direct  
  
Input Watts (W): 11.8  
Input Voltage (V): NR  
Input Current (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°  | 4173 | 4173 | 4173 |
| 5°  | 4119 | 4100 | 4183 |
| 10° | 4021 | 4146 | 4239 |
| 15° | 3905 | 4023 | 3962 |
| 20° | 3774 | 3760 | 3815 |
| 25° | 3639 | 3588 | 3867 |
| 30° | 3457 | 3447 | 3939 |
| 35° | 3315 | 3315 | 3901 |
| 40° | 3164 | 3212 | 3958 |
| 45° | 3004 | 3083 | 3925 |
| 50° | 2818 | 2948 | 3935 |
| 55° | 2571 | 2804 | 3982 |
| 60° | 2362 | 2609 | 3867 |
| 65° | 2013 | 2380 | 3811 |
| 70° | 1565 | 2086 | 3493 |
| 75° | 1041 | 1734 | 3284 |
| 80° | 519  | 1382 | 3075 |
| 85° | 153  | 1023 | 2895 |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 90°

Vertical Angle: 55°

Luminance: 3982 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 37.3   | 3.2       |
| 10°-20°   | 106.1  | 9.1       |
| 20°-30°   | 157.9  | 13.5      |
| 30°-40°   | 189.8  | 16.2      |
| 40°-50°   | 199.8  | 17.1      |
| 50°-60°   | 185.4  | 15.9      |
| 60°-70°   | 146.6  | 12.5      |
| 70°-80°   | 89.5   | 7.7       |
| 80°-90°   | 39.0   | 3.3       |
| 90°-100°  | 12.1   | 1.0       |
| 100°-110° | 2.7    | 0.2       |
| 110°-120° | 1.1    | 0.1       |
| 120°-130° | 0.6    | 0.1       |
| 130°-140° | 0.2    | 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°    | 301.3  | 25.8      |
| 0°-40°    | 491.1  | 42.0      |
| 0°-60°    | 876.2  | 75.0      |
| 0°-90°    | 1151.2 | 98.6      |
| 90°-120°  | 16.0   | 1.4       |
| 90°-150°  | 16.8   | 1.4       |
| 90°-180°  | 17.0   | 1.5       |
| 0°-180°   | 1168.0 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°  | 22.5° | 45° | 67.5° | 90° | Flux |
|------|-----|-------|-----|-------|-----|------|
| 0°   | 388 | 388   | 388 | 388   | 388 |      |
| 5°   | 387 | 386   | 387 | 392   | 393 | 37   |
| 15°  | 366 | 380   | 384 | 371   | 371 | 103  |
| 25°  | 330 | 351   | 335 | 345   | 351 | 152  |
| 35°  | 282 | 290   | 294 | 321   | 332 | 176  |
| 45°  | 230 | 231   | 250 | 290   | 301 | 177  |
| 55°  | 170 | 172   | 200 | 243   | 263 | 152  |
| 65°  | 107 | 111   | 141 | 186   | 203 | 106  |
| 75°  | 41  | 54    | 78  | 120   | 128 | 44   |
| 85°  | 4   | 13    | 31  | 59    | 68  | 6    |
| 90°  | 0   | 4     | 16  | 38    | 44  | 0    |
| 95°  | 0   | 1     | 7   | 21    | 25  | 0    |
| 105° | 0   | 1     | 1   | 4     | 6   | 0    |
| 115° | 0   | 0     | 1   | 2     | 2   | 0    |
| 125° | 0   | 0     | 0   | 1     | 2   | 0    |
| 135° | 0   | 0     | 0   | 0     | 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    |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°    | 22.5° | 45°   | 67.5° | 90°   |
|--------|-------|-------|-------|-------|-------|
| 0°     | 387.7 | 387.7 | 387.7 | 387.7 | 387.7 |
| 2.5°   | 388.2 | 387.2 | 385.0 | 387.1 | 387.6 |
| 5°     | 386.8 | 386.0 | 387.3 | 391.7 | 392.8 |
| 7.5°   | 383.5 | 386.5 | 390.1 | 398.0 | 400.5 |
| 10°    | 378.7 | 384.4 | 395.1 | 401.8 | 399.2 |
| 12.5°  | 372.9 | 382.5 | 396.8 | 383.7 | 377.6 |
| 15°    | 366.1 | 380.1 | 383.8 | 371.1 | 371.4 |
| 17.5°  | 358.1 | 378.2 | 366.7 | 366.4 | 364.1 |
| 20°    | 349.5 | 371.5 | 356.4 | 355.7 | 353.3 |
| 22.5°  | 340.2 | 362.8 | 347.2 | 345.9 | 352.6 |
| 25°    | 330.2 | 351.3 | 335.3 | 345.3 | 350.9 |
| 27.5°  | 317.7 | 336.3 | 325.3 | 339.5 | 346.6 |
| 30°    | 304.9 | 320.8 | 315.1 | 335.0 | 347.4 |
| 32.5°  | 293.0 | 304.6 | 306.8 | 333.2 | 335.3 |
| 35°    | 281.7 | 289.5 | 293.9 | 320.6 | 331.5 |
| 37.5°  | 269.3 | 271.5 | 283.0 | 315.3 | 325.8 |
| 40°    | 256.7 | 255.3 | 273.8 | 306.6 | 321.1 |
| 42.5°  | 243.1 | 242.6 | 264.1 | 302.3 | 309.5 |
| 45°    | 230.2 | 231.3 | 250.3 | 289.9 | 300.8 |
| 47.5°  | 217.0 | 218.4 | 237.2 | 276.4 | 289.9 |
| 50°    | 201.7 | 203.5 | 225.5 | 264.4 | 281.7 |
| 52.5°  | 185.1 | 188.4 | 214.1 | 253.1 | 270.5 |
| 55°    | 169.6 | 172.3 | 199.7 | 243.3 | 262.7 |
| 57.5°  | 155.4 | 157.0 | 184.7 | 231.1 | 245.7 |
| 60°    | 141.4 | 141.8 | 170.7 | 217.5 | 231.5 |
| 62.5°  | 125.3 | 126.1 | 156.2 | 201.5 | 220.2 |
| 65°    | 107.3 | 110.7 | 140.7 | 186.2 | 203.1 |
| 67.5°  | 90.5  | 96.4  | 124.8 | 172.1 | 180.9 |
| 70°    | 72.5  | 82.5  | 109.2 | 155.6 | 161.8 |
| 72.5°  | 56.0  | 67.8  | 93.3  | 137.1 | 145.9 |
| 75°    | 40.6  | 53.8  | 78.4  | 120.5 | 128.1 |
| 77.5°  | 27.3  | 40.8  | 64.5  | 102.2 | 112.2 |
| 80°    | 16.3  | 29.8  | 52.1  | 85.2  | 96.5  |
| 82.5°  | 8.4   | 20.0  | 40.4  | 71.5  | 81.6  |
| 85°    | 3.6   | 12.6  | 30.6  | 59.3  | 68.1  |
| 87.5°  | 1.0   | 7.2   | 22.5  | 47.9  | 55.4  |
| 90°    | 0.1   | 3.8   | 16.0  | 37.6  | 44.3  |
| 92.5°  | 0.1   | 1.8   | 11.3  | 28.4  | 33.6  |
| 95°    | 0.1   | 0.9   | 7.0   | 20.6  | 25.2  |
| 97.5°  | 0.1   | 0.6   | 4.3   | 14.6  | 18.5  |
| 100°   | 0.1   | 0.5   | 2.5   | 9.7   | 13.2  |
| 102.5° | 0.1   | 0.6   | 1.7   | 6.2   | 8.6   |
| 105°   | 0.1   | 0.6   | 1.4   | 4.0   | 5.7   |
| 107.5° | 0.2   | 0.6   | 1.3   | 3.0   | 3.9   |
| 110°   | 0.1   | 0.5   | 1.3   | 2.3   | 3.1   |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°  | 22.5° | 45° | 67.5° | 90° |
|--------|-----|-------|-----|-------|-----|
| 112.5° | 0.2 | 0.4   | 1.3 | 1.9   | 2.3 |
| 115°   | 0.1 | 0.3   | 1.1 | 1.8   | 1.9 |
| 117.5° | 0.2 | 0.2   | 0.9 | 1.8   | 1.9 |
| 120°   | 0.2 | 0.2   | 0.7 | 1.7   | 2.0 |
| 122.5° | 0.2 | 0.2   | 0.6 | 1.6   | 1.9 |
| 125°   | 0.1 | 0.2   | 0.5 | 1.2   | 1.7 |
| 127.5° | 0.2 | 0.2   | 0.4 | 0.9   | 1.3 |
| 130°   | 0.2 | 0.2   | 0.3 | 0.7   | 0.9 |
| 132.5° | 0.2 | 0.2   | 0.2 | 0.6   | 0.7 |
| 135°   | 0.2 | 0.2   | 0.2 | 0.4   | 0.6 |
| 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)