

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: P517147

Luminaire Tested: HVL12-1-LD4-1HI-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: P517147  
Test Lab: INNOVATION CENTER  
Issue Date: 4/27/2021  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: FAIL-SAFE  
Catalog Number: HVL12-1-LD4-1HI-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: 1019.0 lumens  
Efficiency: N/A  
Efficacy: 92.6 lumens/watt  
Spacing Criteria (0/90/45): 1.18 / 1.32 / 1.36  
Luminous Opening: Rectangular w/ Sides (W: 1' x L: 1' x H: 0.17')  
CIE Type: Direct

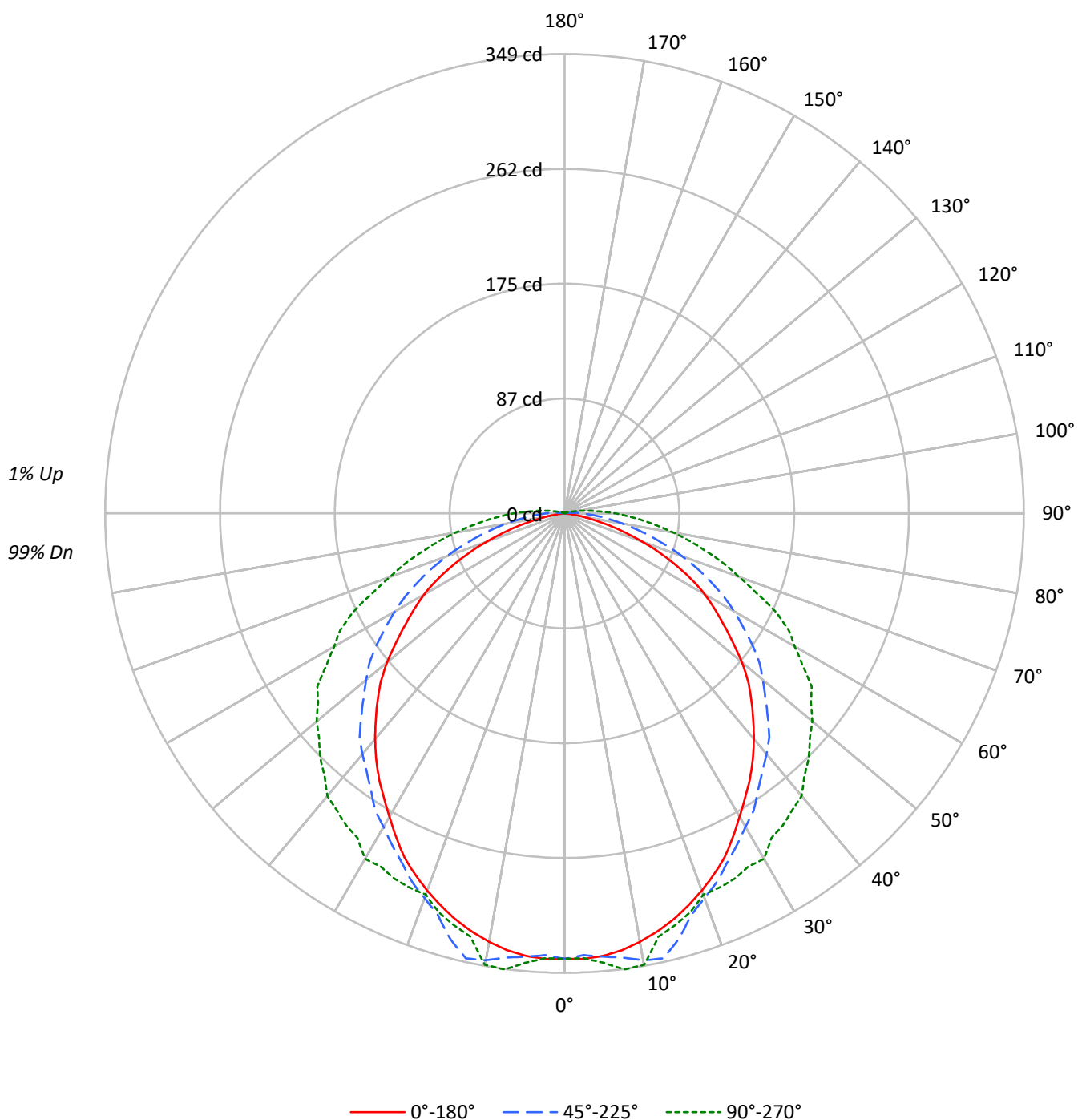
Input Watts (W): 11  
Input Voltage (V): NR  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT

| 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 | 103 | 98  | 94  | 105 | 100 | 96  | 92  | 96  | 92  | 89  |  | 91  | 89  | 86  |  | 87  |
| 2   | 98  | 89  | 82  | 76  | 95  | 87  | 80  | 75  | 83  | 78  | 73  |  | 80  | 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  | 51  |  | 62  | 56  | 51  |  | 60  |
| 5   | 75  | 61  | 52  | 45  | 72  | 60  | 51  | 45  | 58  | 50  | 44  |  | 56  | 49  | 44  |  | 54  |
| 6   | 69  | 55  | 46  | 39  | 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°  | 3641 | 3641 | 3641 |
| 5°  | 3593 | 3577 | 3650 |
| 10° | 3508 | 3617 | 3697 |
| 15° | 3407 | 3510 | 3456 |
| 20° | 3293 | 3280 | 3328 |
| 25° | 3175 | 3130 | 3373 |
| 30° | 3016 | 3007 | 3437 |
| 35° | 2892 | 2892 | 3403 |
| 40° | 2760 | 2802 | 3454 |
| 45° | 2621 | 2690 | 3424 |
| 50° | 2459 | 2571 | 3434 |
| 55° | 2242 | 2446 | 3474 |
| 60° | 2060 | 2276 | 3374 |
| 65° | 1756 | 2076 | 3325 |
| 70° | 1366 | 1820 | 3048 |
| 75° | 908  | 1513 | 2866 |
| 80° | 456  | 1207 | 2683 |
| 85° | 136  | 893  | 2525 |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 90°

Vertical Angle: 55°

Luminance: 3474 cd/sqm

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

**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 32.5   | 3.2       |
| 10°-20°   | 92.6   | 9.1       |
| 20°-30°   | 137.7  | 13.5      |
| 30°-40°   | 165.6  | 16.2      |
| 40°-50°   | 174.3  | 17.1      |
| 50°-60°   | 161.7  | 15.9      |
| 60°-70°   | 127.9  | 12.5      |
| 70°-80°   | 78.1   | 7.7       |
| 80°-90°   | 34.0   | 3.3       |
| 90°-100°  | 10.6   | 1.0       |
| 100°-110° | 2.4    | 0.2       |
| 110°-120° | 1.0    | 0.1       |
| 120°-130° | 0.5    | 0.1       |
| 130°-140° | 0.1    | 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°    | 262.8  | 25.8      |
| 0°-40°    | 428.4  | 42.0      |
| 0°-60°    | 764.4  | 75.0      |
| 0°-90°    | 1004.4 | 98.6      |
| 90°-120°  | 13.9   | 1.4       |
| 90°-150°  | 14.6   | 1.4       |
| 90°-180°  | 15.0   | 1.5       |
| 0°-180°   | 1019.0 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°  | 22.5° | 45° | 67.5° | 90° | Flux |
|------|-----|-------|-----|-------|-----|------|
| 0°   | 338 | 338   | 338 | 338   | 338 |      |
| 5°   | 337 | 337   | 338 | 342   | 343 | 32   |
| 15°  | 319 | 332   | 335 | 324   | 324 | 90   |
| 25°  | 288 | 306   | 292 | 301   | 306 | 132  |
| 35°  | 246 | 253   | 256 | 280   | 289 | 154  |
| 45°  | 201 | 202   | 218 | 253   | 262 | 155  |
| 55°  | 148 | 150   | 174 | 212   | 229 | 133  |
| 65°  | 94  | 97    | 123 | 162   | 177 | 93   |
| 75°  | 35  | 47    | 68  | 105   | 112 | 39   |
| 85°  | 3   | 11    | 27  | 52    | 59  | 5    |
| 90°  | 0   | 3     | 14  | 33    | 39  | 0    |
| 95°  | 0   | 1     | 6   | 18    | 22  | 0    |
| 105° | 0   | 0     | 1   | 4     | 5   | 0    |
| 115° | 0   | 0     | 1   | 2     | 2   | 0    |
| 125° | 0   | 0     | 0   | 1     | 1   | 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°     | 338.3 | 338.3 | 338.3 | 338.3 | 338.3 |
| 2.5°   | 338.7 | 337.8 | 335.9 | 337.7 | 338.2 |
| 5°     | 337.4 | 336.7 | 337.9 | 341.7 | 342.7 |
| 7.5°   | 334.6 | 337.2 | 340.3 | 347.2 | 349.4 |
| 10°    | 330.4 | 335.4 | 344.7 | 350.5 | 348.2 |
| 12.5°  | 325.3 | 333.7 | 346.2 | 334.7 | 329.4 |
| 15°    | 319.4 | 331.6 | 334.9 | 323.8 | 324.0 |
| 17.5°  | 312.4 | 329.9 | 319.9 | 319.6 | 317.7 |
| 20°    | 304.9 | 324.1 | 310.9 | 310.3 | 308.2 |
| 22.5°  | 296.8 | 316.5 | 302.9 | 301.8 | 307.6 |
| 25°    | 288.1 | 306.5 | 292.5 | 301.3 | 306.1 |
| 27.5°  | 277.1 | 293.4 | 283.8 | 296.2 | 302.4 |
| 30°    | 266.0 | 279.9 | 274.9 | 292.2 | 303.1 |
| 32.5°  | 255.6 | 265.8 | 267.6 | 290.7 | 292.5 |
| 35°    | 245.8 | 252.6 | 256.4 | 279.7 | 289.2 |
| 37.5°  | 235.0 | 236.8 | 246.9 | 275.1 | 284.2 |
| 40°    | 223.9 | 222.8 | 238.9 | 267.5 | 280.2 |
| 42.5°  | 212.1 | 211.7 | 230.4 | 263.7 | 270.0 |
| 45°    | 200.9 | 201.8 | 218.4 | 252.9 | 262.4 |
| 47.5°  | 189.3 | 190.5 | 206.9 | 241.2 | 252.9 |
| 50°    | 176.0 | 177.5 | 196.7 | 230.7 | 245.8 |
| 52.5°  | 161.5 | 164.4 | 186.8 | 220.8 | 236.0 |
| 55°    | 147.9 | 150.3 | 174.2 | 212.3 | 229.2 |
| 57.5°  | 135.5 | 137.0 | 161.2 | 201.6 | 214.4 |
| 60°    | 123.3 | 123.7 | 148.9 | 189.8 | 202.0 |
| 62.5°  | 109.4 | 110.0 | 136.3 | 175.8 | 192.1 |
| 65°    | 93.6  | 96.6  | 122.7 | 162.4 | 177.2 |
| 67.5°  | 79.0  | 84.1  | 108.9 | 150.1 | 157.9 |
| 70°    | 63.3  | 72.0  | 95.3  | 135.7 | 141.2 |
| 72.5°  | 48.9  | 59.1  | 81.4  | 119.6 | 127.3 |
| 75°    | 35.4  | 46.9  | 68.4  | 105.1 | 111.8 |
| 77.5°  | 23.8  | 35.6  | 56.3  | 89.2  | 97.9  |
| 80°    | 14.3  | 26.0  | 45.5  | 74.3  | 84.2  |
| 82.5°  | 7.3   | 17.4  | 35.3  | 62.4  | 71.2  |
| 85°    | 3.2   | 11.0  | 26.7  | 51.7  | 59.4  |
| 87.5°  | 0.9   | 6.3   | 19.6  | 41.8  | 48.3  |
| 90°    | 0.1   | 3.3   | 14.0  | 32.8  | 38.7  |
| 92.5°  | 0.1   | 1.6   | 9.9   | 24.8  | 29.3  |
| 95°    | 0.1   | 0.8   | 6.1   | 18.0  | 22.0  |
| 97.5°  | 0.1   | 0.5   | 3.7   | 12.7  | 16.1  |
| 100°   | 0.1   | 0.4   | 2.2   | 8.5   | 11.5  |
| 102.5° | 0.1   | 0.5   | 1.5   | 5.4   | 7.5   |
| 105°   | 0.1   | 0.5   | 1.2   | 3.5   | 5.0   |
| 107.5° | 0.1   | 0.5   | 1.1   | 2.6   | 3.4   |
| 110°   | 0.1   | 0.4   | 1.2   | 2.0   | 2.7   |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°  | 22.5° | 45° | 67.5° | 90° |
|--------|-----|-------|-----|-------|-----|
| 112.5° | 0.1 | 0.3   | 1.1 | 1.7   | 2.0 |
| 115°   | 0.1 | 0.3   | 1.0 | 1.6   | 1.7 |
| 117.5° | 0.1 | 0.2   | 0.8 | 1.6   | 1.7 |
| 120°   | 0.1 | 0.1   | 0.6 | 1.5   | 1.7 |
| 122.5° | 0.1 | 0.1   | 0.5 | 1.4   | 1.7 |
| 125°   | 0.1 | 0.1   | 0.4 | 1.0   | 1.4 |
| 127.5° | 0.1 | 0.1   | 0.3 | 0.8   | 1.1 |
| 130°   | 0.1 | 0.1   | 0.3 | 0.6   | 0.8 |
| 132.5° | 0.1 | 0.1   | 0.2 | 0.5   | 0.6 |
| 135°   | 0.1 | 0.1   | 0.1 | 0.3   | 0.5 |
| 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)