

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: P517728

Luminaire Tested: HVL8-1-LD4-1HI-35-UNV-C-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: P517728  
Test Lab: INNOVATION CENTER  
Issue Date: 4/27/2021  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: FAIL-SAFE  
Catalog Number: HVL8-1-LD4-1HI-35-UNV-C-EDD  
Description: 1 FOOT, 8 INCH WIDE, HVL LED LUMINAIRE, WITH 3500K, 80 CRI LEDS  
Light Source: -  
Ballast/Driver: -

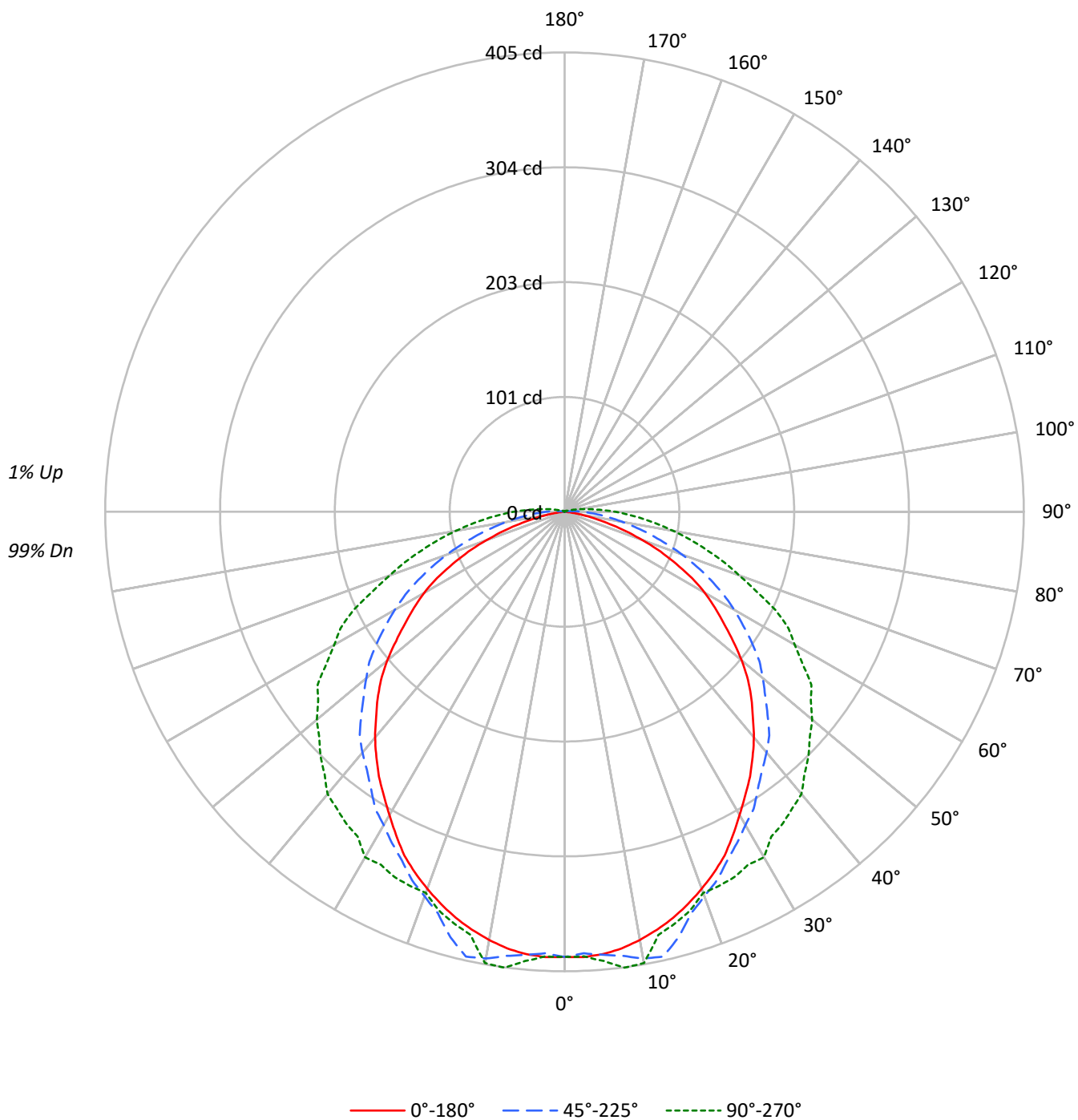
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 1182.0 lumens  
Efficiency: N/A  
Efficacy: 110.5 lumens/watt  
Spacing Criteria (0/90/45): 1.18 / 1.32 / 1.37  
Luminous Opening: Rectangular w/ Sides (W: 0.67' x L: 1' x H: 0.17')  
CIE Type: Direct  
  
Input Watts (W): 10.7  
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



TEST NUMBER: P517728

CATALOG NUMBER: HVL8-1-LD4-1HI-35-UNV-C-EDD

**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  | 44  | 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°  | 6336 | 6336 | 6336 |
| 5°  | 6252 | 6194 | 6305 |
| 10° | 6103 | 6231 | 6342 |
| 15° | 5928 | 6017 | 5887 |
| 20° | 5730 | 5596 | 5630 |
| 25° | 5524 | 5314 | 5666 |
| 30° | 5248 | 5081 | 5728 |
| 35° | 5032 | 4859 | 5628 |
| 40° | 4804 | 4683 | 5662 |
| 45° | 4560 | 4467 | 5560 |
| 50° | 4277 | 4242 | 5517 |
| 55° | 3902 | 4004 | 5513 |
| 60° | 3586 | 3692 | 5279 |
| 65° | 3056 | 3331 | 5111 |
| 70° | 2377 | 2883 | 4584 |
| 75° | 1581 | 2359 | 4182 |
| 80° | 789  | 1838 | 3757 |
| 85° | 236  | 1310 | 3308 |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 90°

Vertical Angle: 45°

Luminance: 5560 cd/sqm

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CATALOG NUMBER: HVL8-1-LD4-1HI-35-UNV-C-EDD

**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 37.7   | 3.2       |
| 10°-20°   | 107.4  | 9.1       |
| 20°-30°   | 159.8  | 13.5      |
| 30°-40°   | 192.1  | 16.2      |
| 40°-50°   | 202.2  | 17.1      |
| 50°-60°   | 187.6  | 15.9      |
| 60°-70°   | 148.3  | 12.5      |
| 70°-80°   | 90.6   | 7.7       |
| 80°-90°   | 39.5   | 3.3       |
| 90°-100°  | 12.3   | 1.0       |
| 100°-110° | 2.8    | 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°    | 304.9  | 25.8      |
| 0°-40°    | 496.9  | 42.0      |
| 0°-60°    | 886.7  | 75.0      |
| 0°-90°    | 1165.1 | 98.6      |
| 90°-120°  | 16.2   | 1.4       |
| 90°-150°  | 17.0   | 1.4       |
| 90°-180°  | 17.0   | 1.4       |
| 0°-180°   | 1182.0 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°  | 22.5° | 45° | 67.5° | 90° | Flux |
|------|-----|-------|-----|-------|-----|------|
| 0°   | 392 | 392   | 392 | 392   | 392 |      |
| 5°   | 391 | 391   | 392 | 396   | 398 | 37   |
| 15°  | 370 | 385   | 388 | 376   | 376 | 104  |
| 25°  | 334 | 356   | 339 | 349   | 355 | 153  |
| 35°  | 285 | 293   | 297 | 324   | 336 | 178  |
| 45°  | 233 | 234   | 253 | 293   | 304 | 180  |
| 55°  | 172 | 174   | 202 | 246   | 266 | 154  |
| 65°  | 109 | 112   | 142 | 188   | 206 | 108  |
| 75°  | 41  | 54    | 79  | 122   | 130 | 45   |
| 85°  | 4   | 13    | 31  | 60    | 69  | 6    |
| 90°  | 0   | 4     | 16  | 38    | 45  | 0    |
| 95°  | 0   | 1     | 7   | 21    | 26  | 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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CATALOG NUMBER: HVL8-1-LD4-1HI-35-UNV-C-EDD

**CANDELA DISTRIBUTION (FULL):**

|        | 0°    | 22.5° | 45°   | 67.5° | 90°   |
|--------|-------|-------|-------|-------|-------|
| 0°     | 392.4 | 392.4 | 392.4 | 392.4 | 392.4 |
| 2.5°   | 392.8 | 391.8 | 389.6 | 391.7 | 392.3 |
| 5°     | 391.4 | 390.6 | 392.0 | 396.4 | 397.5 |
| 7.5°   | 388.1 | 391.2 | 394.8 | 402.8 | 405.3 |
| 10°    | 383.2 | 389.0 | 399.8 | 406.6 | 403.9 |
| 12.5°  | 377.3 | 387.1 | 401.6 | 388.3 | 382.1 |
| 15°    | 370.5 | 384.7 | 388.4 | 375.6 | 375.8 |
| 17.5°  | 362.4 | 382.7 | 371.1 | 370.8 | 368.5 |
| 20°    | 353.7 | 376.0 | 360.6 | 360.0 | 357.5 |
| 22.5°  | 344.3 | 367.1 | 351.4 | 350.1 | 356.8 |
| 25°    | 334.2 | 355.5 | 339.3 | 349.4 | 355.1 |
| 27.5°  | 321.5 | 340.3 | 329.2 | 343.6 | 350.7 |
| 30°    | 308.6 | 324.7 | 318.9 | 339.0 | 351.6 |
| 32.5°  | 296.5 | 308.3 | 310.4 | 337.2 | 339.3 |
| 35°    | 285.1 | 293.0 | 297.4 | 324.4 | 335.5 |
| 37.5°  | 272.5 | 274.7 | 286.4 | 319.1 | 329.7 |
| 40°    | 259.8 | 258.4 | 277.1 | 310.3 | 325.0 |
| 42.5°  | 246.0 | 245.5 | 267.3 | 305.9 | 313.2 |
| 45°    | 233.0 | 234.0 | 253.3 | 293.4 | 304.4 |
| 47.5°  | 219.6 | 221.0 | 240.0 | 279.7 | 293.3 |
| 50°    | 204.1 | 205.9 | 228.2 | 267.6 | 285.1 |
| 52.5°  | 187.3 | 190.7 | 216.7 | 256.1 | 273.7 |
| 55°    | 171.6 | 174.4 | 202.1 | 246.3 | 265.8 |
| 57.5°  | 157.2 | 158.9 | 186.9 | 233.9 | 248.7 |
| 60°    | 143.1 | 143.5 | 172.7 | 220.1 | 234.3 |
| 62.5°  | 126.8 | 127.6 | 158.1 | 203.9 | 222.8 |
| 65°    | 108.6 | 112.1 | 142.3 | 188.4 | 205.5 |
| 67.5°  | 91.6  | 97.6  | 126.3 | 174.2 | 183.1 |
| 70°    | 73.4  | 83.5  | 110.5 | 157.5 | 163.8 |
| 72.5°  | 56.7  | 68.6  | 94.4  | 138.8 | 147.6 |
| 75°    | 41.1  | 54.4  | 79.4  | 122.0 | 129.6 |
| 77.5°  | 27.7  | 41.2  | 65.3  | 103.4 | 113.6 |
| 80°    | 16.5  | 30.1  | 52.8  | 86.2  | 97.7  |
| 82.5°  | 8.5   | 20.2  | 40.9  | 72.3  | 82.6  |
| 85°    | 3.7   | 12.8  | 30.9  | 60.0  | 68.9  |
| 87.5°  | 1.0   | 7.3   | 22.8  | 48.5  | 56.0  |
| 90°    | 0.1   | 3.8   | 16.2  | 38.0  | 44.8  |
| 92.5°  | 0.1   | 1.8   | 11.4  | 28.8  | 34.0  |
| 95°    | 0.1   | 1.0   | 7.1   | 20.9  | 25.5  |
| 97.5°  | 0.1   | 0.6   | 4.3   | 14.8  | 18.7  |
| 100°   | 0.1   | 0.5   | 2.6   | 9.8   | 13.3  |
| 102.5° | 0.1   | 0.6   | 1.8   | 6.2   | 8.7   |
| 105°   | 0.1   | 0.6   | 1.4   | 4.1   | 5.8   |
| 107.5° | 0.2   | 0.6   | 1.3   | 3.0   | 4.0   |
| 110°   | 0.1   | 0.5   | 1.4   | 2.3   | 3.1   |

TEST NUMBER: P517728

CATALOG NUMBER: HVL8-1-LD4-1HI-35-UNV-C-EDD

**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 | 1.8   | 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 | 1.0   | 1.3 |
| 130°   | 0.2 | 0.2   | 0.3 | 0.7   | 1.0 |
| 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)