

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: P517800

Luminaire Tested: HVL8-1-LD4-2LO-50-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: P517800  
Test Lab: INNOVATION CENTER  
Issue Date: 4/27/2021  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: FAIL-SAFE  
Catalog Number: HVL8-1-LD4-2LO-50-UNV-C-EDD  
Description: 1 FOOT, 8 INCH WIDE, HVL LED LUMINAIRE, WITH 5000K, 80 CRI LEDS  
Light Source: -  
Ballast/Driver: -

**Summary**

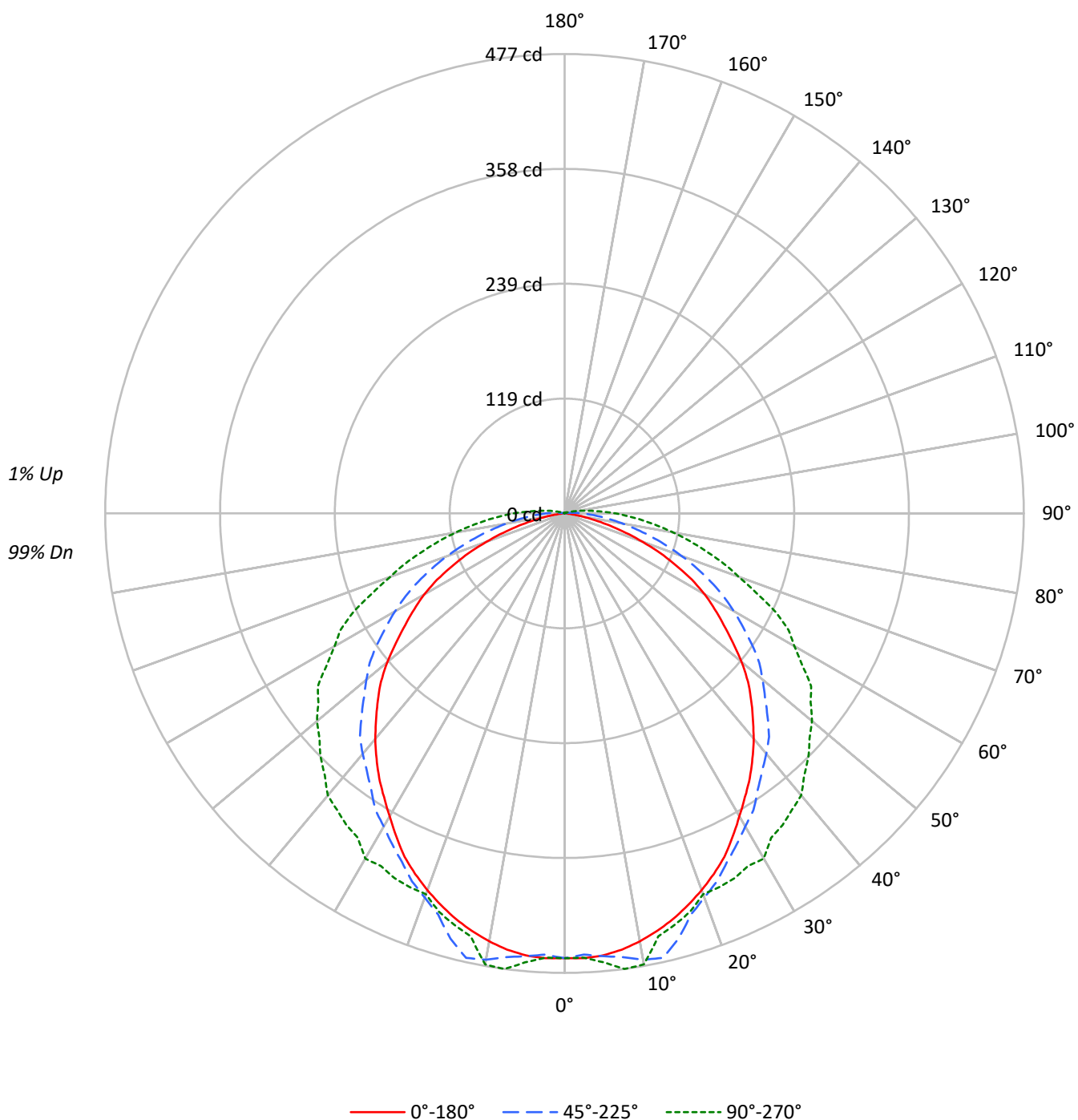
Lumens per Lamp: N/A  
Luminaire Lumens: 1391.0 lumens  
Efficiency: N/A  
Efficacy: 121.0 lumens/watt  
Spacing Criteria (0/90/45): 1.18 / 1.32 / 1.37  
Luminous Opening: Rectangular w/ Sides (W: 0.67' x L: 1' x H: 0.17')  
CIE Type: Direct

Input Watts (W): 11.5  
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  | 44  | 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°  | 7455 | 7455 | 7455 |
| 5°  | 7358 | 7289 | 7420 |
| 10° | 7183 | 7333 | 7465 |
| 15° | 6976 | 7081 | 6929 |
| 20° | 6742 | 6586 | 6626 |
| 25° | 6501 | 6254 | 6667 |
| 30° | 6177 | 5980 | 6741 |
| 35° | 5922 | 5719 | 6622 |
| 40° | 5653 | 5511 | 6662 |
| 45° | 5366 | 5257 | 6543 |
| 50° | 5033 | 4991 | 6493 |
| 55° | 4591 | 4711 | 6488 |
| 60° | 4220 | 4346 | 6212 |
| 65° | 3597 | 3921 | 6013 |
| 70° | 2794 | 3394 | 5392 |
| 75° | 1857 | 2775 | 4924 |
| 80° | 932  | 2162 | 4418 |
| 85° | 274  | 1544 | 3894 |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 90°

Vertical Angle: 45°

Luminance: 6543 cd/sqm

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CATALOG NUMBER: HVL8-1-LD4-2LO-50-UNV-C-EDD

**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 44.4   | 3.2       |
| 10°-20°   | 126.4  | 9.1       |
| 20°-30°   | 188.0  | 13.5      |
| 30°-40°   | 226.0  | 16.2      |
| 40°-50°   | 237.9  | 17.1      |
| 50°-60°   | 220.7  | 15.9      |
| 60°-70°   | 174.5  | 12.5      |
| 70°-80°   | 106.6  | 7.7       |
| 80°-90°   | 46.5   | 3.3       |
| 90°-100°  | 14.5   | 1.0       |
| 100°-110° | 3.3    | 0.2       |
| 110°-120° | 1.3    | 0.1       |
| 120°-130° | 0.7    | 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°    | 358.8  | 25.8      |
| 0°-40°    | 584.8  | 42.0      |
| 0°-60°    | 1043.5 | 75.0      |
| 0°-90°    | 1371.0 | 98.6      |
| 90°-120°  | 19.1   | 1.4       |
| 90°-150°  | 20.0   | 1.4       |
| 90°-180°  | 20.0   | 1.4       |
| 0°-180°   | 1391.0 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°  | 22.5° | 45° | 67.5° | 90° | Flux |
|------|-----|-------|-----|-------|-----|------|
| 0°   | 462 | 462   | 462 | 462   | 462 |      |
| 5°   | 461 | 460   | 461 | 466   | 468 | 44   |
| 15°  | 436 | 453   | 457 | 442   | 442 | 123  |
| 25°  | 393 | 418   | 399 | 411   | 418 | 181  |
| 35°  | 336 | 345   | 350 | 382   | 395 | 210  |
| 45°  | 274 | 275   | 298 | 345   | 358 | 211  |
| 55°  | 202 | 205   | 238 | 290   | 313 | 181  |
| 65°  | 128 | 132   | 168 | 222   | 242 | 127  |
| 75°  | 48  | 64    | 93  | 144   | 153 | 53   |
| 85°  | 4   | 15    | 36  | 71    | 81  | 7    |
| 90°  | 0   | 4     | 19  | 45    | 53  | 0    |
| 95°  | 0   | 1     | 8   | 24    | 30  | 0    |
| 105° | 0   | 1     | 2   | 5     | 7   | 0    |
| 115° | 0   | 0     | 1   | 2     | 2   | 0    |
| 125° | 0   | 0     | 1   | 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    |

TEST NUMBER: P517800

CATALOG NUMBER: HVL8-1-LD4-2LO-50-UNV-C-EDD

**CANDELA DISTRIBUTION (FULL):**

|        | 0°    | 22.5° | 45°   | 67.5° | 90°   |
|--------|-------|-------|-------|-------|-------|
| 0°     | 461.7 | 461.7 | 461.7 | 461.7 | 461.7 |
| 2.5°   | 462.3 | 461.1 | 458.5 | 461.0 | 461.6 |
| 5°     | 460.6 | 459.7 | 461.3 | 466.4 | 467.8 |
| 7.5°   | 456.8 | 460.3 | 464.6 | 474.0 | 477.0 |
| 10°    | 451.0 | 457.8 | 470.5 | 478.5 | 475.4 |
| 12.5°  | 444.1 | 455.5 | 472.6 | 456.9 | 449.7 |
| 15°    | 436.0 | 452.7 | 457.1 | 442.0 | 442.3 |
| 17.5°  | 426.5 | 450.4 | 436.7 | 436.3 | 433.6 |
| 20°    | 416.2 | 442.5 | 424.4 | 423.6 | 420.7 |
| 22.5°  | 405.2 | 432.0 | 413.5 | 412.0 | 419.9 |
| 25°    | 393.3 | 418.4 | 399.3 | 411.2 | 417.9 |
| 27.5°  | 378.3 | 400.5 | 387.4 | 404.4 | 412.7 |
| 30°    | 363.2 | 382.1 | 375.3 | 398.9 | 413.8 |
| 32.5°  | 349.0 | 362.8 | 365.3 | 396.8 | 399.3 |
| 35°    | 335.5 | 344.8 | 350.0 | 381.8 | 394.8 |
| 37.5°  | 320.7 | 323.3 | 337.0 | 375.5 | 388.0 |
| 40°    | 305.7 | 304.1 | 326.1 | 365.1 | 382.4 |
| 42.5°  | 289.5 | 288.9 | 314.5 | 360.0 | 368.6 |
| 45°    | 274.2 | 275.4 | 298.1 | 345.3 | 358.2 |
| 47.5°  | 258.5 | 260.1 | 282.5 | 329.2 | 345.2 |
| 50°    | 240.2 | 242.3 | 268.5 | 314.9 | 335.5 |
| 52.5°  | 220.5 | 224.4 | 255.0 | 301.4 | 322.2 |
| 55°    | 201.9 | 205.2 | 237.8 | 289.8 | 312.8 |
| 57.5°  | 185.0 | 187.0 | 220.0 | 275.2 | 292.6 |
| 60°    | 168.4 | 168.8 | 203.3 | 259.0 | 275.7 |
| 62.5°  | 149.3 | 150.1 | 186.0 | 239.9 | 262.2 |
| 65°    | 127.8 | 131.9 | 167.5 | 221.7 | 241.8 |
| 67.5°  | 107.8 | 114.8 | 148.6 | 205.0 | 215.5 |
| 70°    | 86.3  | 98.3  | 130.1 | 185.3 | 192.7 |
| 72.5°  | 66.7  | 80.7  | 111.1 | 163.3 | 173.7 |
| 75°    | 48.3  | 64.1  | 93.4  | 143.5 | 152.6 |
| 77.5°  | 32.5  | 48.5  | 76.8  | 121.7 | 133.7 |
| 80°    | 19.5  | 35.5  | 62.1  | 101.5 | 114.9 |
| 82.5°  | 10.0  | 23.8  | 48.2  | 85.1  | 97.2  |
| 85°    | 4.3   | 15.0  | 36.4  | 70.6  | 81.1  |
| 87.5°  | 1.2   | 8.6   | 26.8  | 57.1  | 65.9  |
| 90°    | 0.1   | 4.5   | 19.1  | 44.8  | 52.8  |
| 92.5°  | 0.1   | 2.2   | 13.5  | 33.9  | 40.0  |
| 95°    | 0.1   | 1.1   | 8.4   | 24.5  | 30.0  |
| 97.5°  | 0.1   | 0.7   | 5.1   | 17.4  | 22.0  |
| 100°   | 0.1   | 0.6   | 3.0   | 11.6  | 15.7  |
| 102.5° | 0.1   | 0.7   | 2.1   | 7.3   | 10.3  |
| 105°   | 0.1   | 0.7   | 1.7   | 4.8   | 6.8   |
| 107.5° | 0.2   | 0.7   | 1.5   | 3.6   | 4.7   |
| 110°   | 0.1   | 0.6   | 1.6   | 2.7   | 3.7   |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°  | 22.5° | 45° | 67.5° | 90° |
|--------|-----|-------|-----|-------|-----|
| 112.5° | 0.2 | 0.5   | 1.5 | 2.3   | 2.7 |
| 115°   | 0.1 | 0.4   | 1.3 | 2.2   | 2.3 |
| 117.5° | 0.2 | 0.3   | 1.0 | 2.2   | 2.3 |
| 120°   | 0.2 | 0.2   | 0.8 | 2.1   | 2.4 |
| 122.5° | 0.2 | 0.2   | 0.7 | 1.9   | 2.3 |
| 125°   | 0.1 | 0.2   | 0.6 | 1.4   | 2.0 |
| 127.5° | 0.2 | 0.2   | 0.5 | 1.1   | 1.5 |
| 130°   | 0.2 | 0.2   | 0.4 | 0.8   | 1.1 |
| 132.5° | 0.2 | 0.2   | 0.3 | 0.7   | 0.8 |
| 135°   | 0.2 | 0.2   | 0.2 | 0.5   | 0.7 |
| 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)