

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: P517732

Luminaire Tested: HVL8-1-LD4-1HI-40-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: P517732  
Test Lab: INNOVATION CENTER  
Issue Date: 4/27/2021  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: FAIL-SAFE  
Catalog Number: HVL8-1-LD4-1HI-40-UNV-C-EDD  
Description: 1 FOOT, 8 INCH WIDE, HVL LED LUMINAIRE, WITH 4000K, 80 CRI LEDS  
Light Source: -  
Ballast/Driver: -

**Summary**

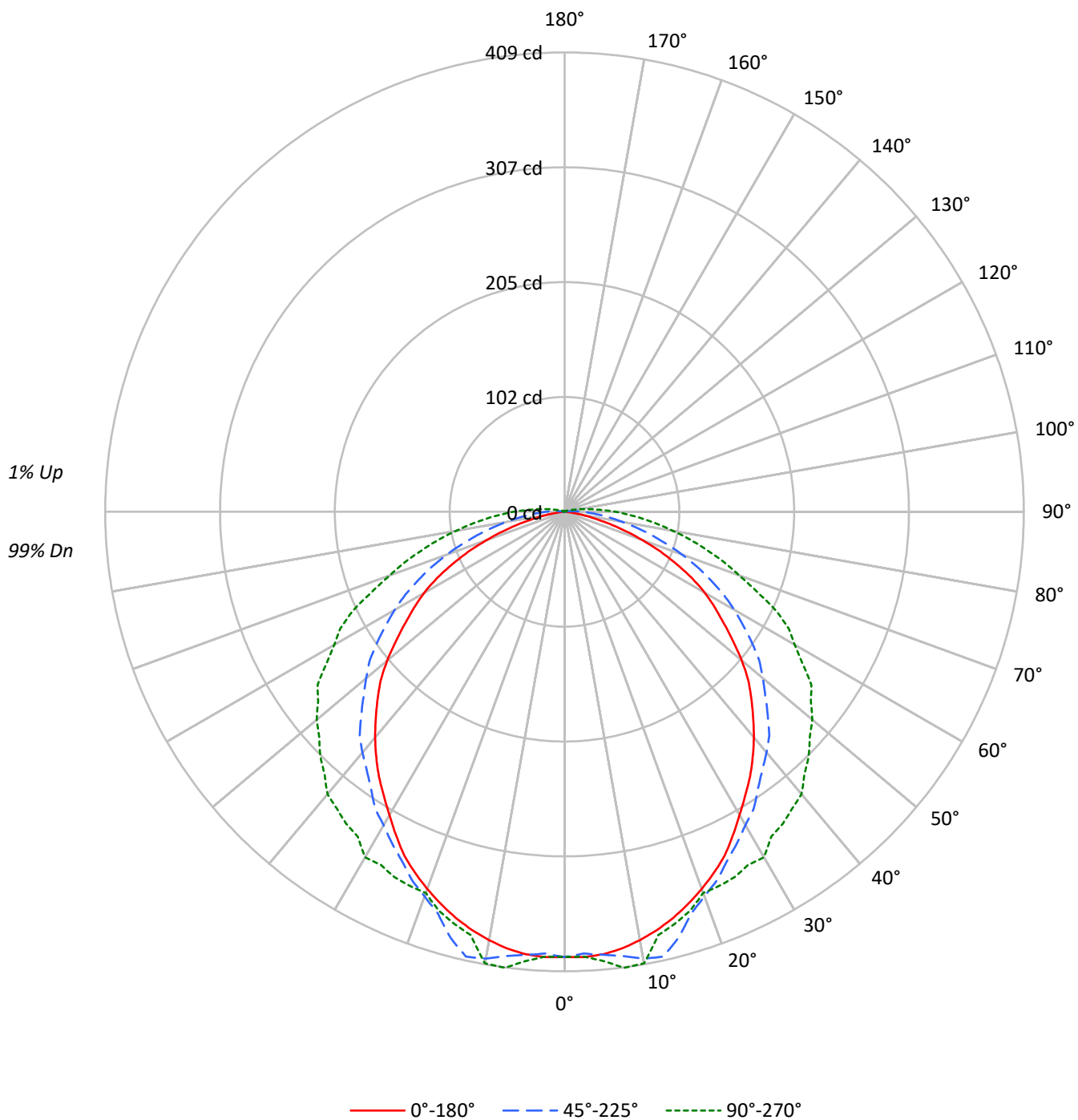
Lumens per Lamp: N/A  
Luminaire Lumens: 1194.1 lumens  
Efficiency: N/A  
Efficacy: 111.6 lumens/watt  
Spacing Criteria (0/90/45): 1.18 / 1.32 / 1.37  
Luminous Opening: Rectangular w/ Sides (W: 0.67' x L: 1' x H: 0.17')  
CIE Type: Direct

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



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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°  | 6399 | 6399 | 6399 |
| 5°  | 6316 | 6255 | 6368 |
| 10° | 6165 | 6295 | 6408 |
| 15° | 5987 | 6079 | 5947 |
| 20° | 5788 | 5653 | 5687 |
| 25° | 5581 | 5368 | 5723 |
| 30° | 5301 | 5132 | 5787 |
| 35° | 5083 | 4908 | 5685 |
| 40° | 4852 | 4730 | 5720 |
| 45° | 4607 | 4513 | 5617 |
| 50° | 4321 | 4285 | 5573 |
| 55° | 3940 | 4044 | 5569 |
| 60° | 3621 | 3731 | 5331 |
| 65° | 3087 | 3366 | 5163 |
| 70° | 2399 | 2914 | 4628 |
| 75° | 1596 | 2383 | 4227 |
| 80° | 798  | 1855 | 3795 |
| 85° | 236  | 1323 | 3342 |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 90°

Vertical Angle: 45°

Luminance: 5617 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 38.1   | 3.2       |
| 10°-20°   | 108.5  | 9.1       |
| 20°-30°   | 161.4  | 13.5      |
| 30°-40°   | 194.0  | 16.2      |
| 40°-50°   | 204.2  | 17.1      |
| 50°-60°   | 189.5  | 15.9      |
| 60°-70°   | 149.8  | 12.5      |
| 70°-80°   | 91.5   | 7.7       |
| 80°-90°   | 39.9   | 3.3       |
| 90°-100°  | 12.4   | 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°    | 308.0  | 25.8      |
| 0°-40°    | 502.0  | 42.0      |
| 0°-60°    | 895.7  | 75.0      |
| 0°-90°    | 1176.9 | 98.6      |
| 90°-120°  | 16.3   | 1.4       |
| 90°-150°  | 17.2   | 1.4       |
| 90°-180°  | 17.0   | 1.4       |
| 0°-180°   | 1194.1 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°  | 22.5° | 45° | 67.5° | 90° | Flux |
|------|-----|-------|-----|-------|-----|------|
| 0°   | 396 | 396   | 396 | 396   | 396 |      |
| 5°   | 395 | 395   | 396 | 400   | 402 | 37   |
| 15°  | 374 | 389   | 392 | 379   | 380 | 105  |
| 25°  | 338 | 359   | 343 | 353   | 359 | 155  |
| 35°  | 288 | 296   | 300 | 328   | 339 | 180  |
| 45°  | 235 | 236   | 256 | 296   | 308 | 181  |
| 55°  | 173 | 176   | 204 | 249   | 268 | 156  |
| 65°  | 110 | 113   | 144 | 190   | 208 | 109  |
| 75°  | 42  | 55    | 80  | 123   | 131 | 45   |
| 85°  | 4   | 13    | 31  | 61    | 70  | 6    |
| 90°  | 0   | 4     | 16  | 38    | 45  | 0    |
| 95°  | 0   | 1     | 7   | 21    | 26  | 0    |
| 105° | 0   | 1     | 2   | 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-40-UNV-C-EDD

**CANDELA DISTRIBUTION (FULL):**

|        | 0°    | 22.5° | 45°   | 67.5° | 90°   |
|--------|-------|-------|-------|-------|-------|
| 0°     | 396.3 | 396.3 | 396.3 | 396.3 | 396.3 |
| 2.5°   | 396.8 | 395.8 | 393.6 | 395.7 | 396.3 |
| 5°     | 395.4 | 394.6 | 395.9 | 400.4 | 401.5 |
| 7.5°   | 392.1 | 395.1 | 398.8 | 406.8 | 409.4 |
| 10°    | 387.1 | 393.0 | 403.9 | 410.7 | 408.1 |
| 12.5°  | 381.2 | 391.0 | 405.6 | 392.2 | 386.0 |
| 15°    | 374.2 | 388.6 | 392.4 | 379.4 | 379.6 |
| 17.5°  | 366.1 | 386.6 | 374.9 | 374.5 | 372.2 |
| 20°    | 357.3 | 379.8 | 364.3 | 363.6 | 361.1 |
| 22.5°  | 347.8 | 370.8 | 354.9 | 353.6 | 360.4 |
| 25°    | 337.6 | 359.1 | 342.7 | 353.0 | 358.7 |
| 27.5°  | 324.7 | 343.8 | 332.6 | 347.1 | 354.3 |
| 30°    | 311.7 | 328.0 | 322.1 | 342.4 | 355.2 |
| 32.5°  | 299.5 | 311.4 | 313.6 | 340.6 | 342.7 |
| 35°    | 288.0 | 296.0 | 300.4 | 327.7 | 338.9 |
| 37.5°  | 275.3 | 277.5 | 289.3 | 322.3 | 333.0 |
| 40°    | 262.4 | 261.0 | 279.9 | 313.4 | 328.3 |
| 42.5°  | 248.5 | 248.0 | 270.0 | 309.0 | 316.4 |
| 45°    | 235.4 | 236.4 | 255.9 | 296.4 | 307.5 |
| 47.5°  | 221.9 | 223.2 | 242.5 | 282.6 | 296.3 |
| 50°    | 206.2 | 208.0 | 230.5 | 270.3 | 288.0 |
| 52.5°  | 189.2 | 192.6 | 218.9 | 258.7 | 276.5 |
| 55°    | 173.3 | 176.2 | 204.1 | 248.8 | 268.5 |
| 57.5°  | 158.8 | 160.5 | 188.8 | 236.2 | 251.2 |
| 60°    | 144.5 | 144.9 | 174.5 | 222.4 | 236.6 |
| 62.5°  | 128.1 | 128.9 | 159.7 | 206.0 | 225.1 |
| 65°    | 109.7 | 113.2 | 143.8 | 190.3 | 207.6 |
| 67.5°  | 92.5  | 98.6  | 127.6 | 175.9 | 185.0 |
| 70°    | 74.1  | 84.4  | 111.7 | 159.1 | 165.4 |
| 72.5°  | 57.2  | 69.3  | 95.4  | 140.2 | 149.1 |
| 75°    | 41.5  | 55.0  | 80.2  | 123.2 | 131.0 |
| 77.5°  | 27.9  | 41.7  | 66.0  | 104.5 | 114.7 |
| 80°    | 16.7  | 30.4  | 53.3  | 87.1  | 98.7  |
| 82.5°  | 8.6   | 20.4  | 41.3  | 73.1  | 83.4  |
| 85°    | 3.7   | 12.9  | 31.2  | 60.6  | 69.6  |
| 87.5°  | 1.0   | 7.3   | 23.0  | 49.0  | 56.6  |
| 90°    | 0.1   | 3.9   | 16.4  | 38.4  | 45.3  |
| 92.5°  | 0.1   | 1.9   | 11.5  | 29.1  | 34.3  |
| 95°    | 0.1   | 1.0   | 7.2   | 21.1  | 25.8  |
| 97.5°  | 0.1   | 0.6   | 4.4   | 14.9  | 18.9  |
| 100°   | 0.1   | 0.5   | 2.6   | 9.9   | 13.5  |
| 102.5° | 0.1   | 0.6   | 1.8   | 6.3   | 8.8   |
| 105°   | 0.1   | 0.6   | 1.5   | 4.1   | 5.8   |
| 107.5° | 0.2   | 0.6   | 1.3   | 3.1   | 4.0   |
| 110°   | 0.1   | 0.5   | 1.4   | 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 | 1.9   | 1.9 |
| 117.5° | 0.2 | 0.2   | 0.9 | 1.9   | 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)