

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: P517741

Luminaire Tested: HVL8-1-LD4-1LO-30-UNV-O-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: P517741  
Test Lab: INNOVATION CENTER  
Issue Date: 4/27/2021  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: FAIL-SAFE  
Catalog Number: HVL8-1-LD4-1LO-30-UNV-O-EDD-90  
Description: 1 FOOT, 8 INCH WIDE, HVL LED LUMINAIRE, WITH 3000K, 90 CRI LEDS  
Light Source: -  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 615.0 lumens  
Efficiency: N/A  
Efficacy: 106.0 lumens/watt  
Spacing Criteria (0/90/45): 1.25 / 1.27 / 1.38  
Luminous Opening: Rectangular w/ Sides (W: 0.67' x L: 1' x H: 0.17')  
CIE Type: Direct

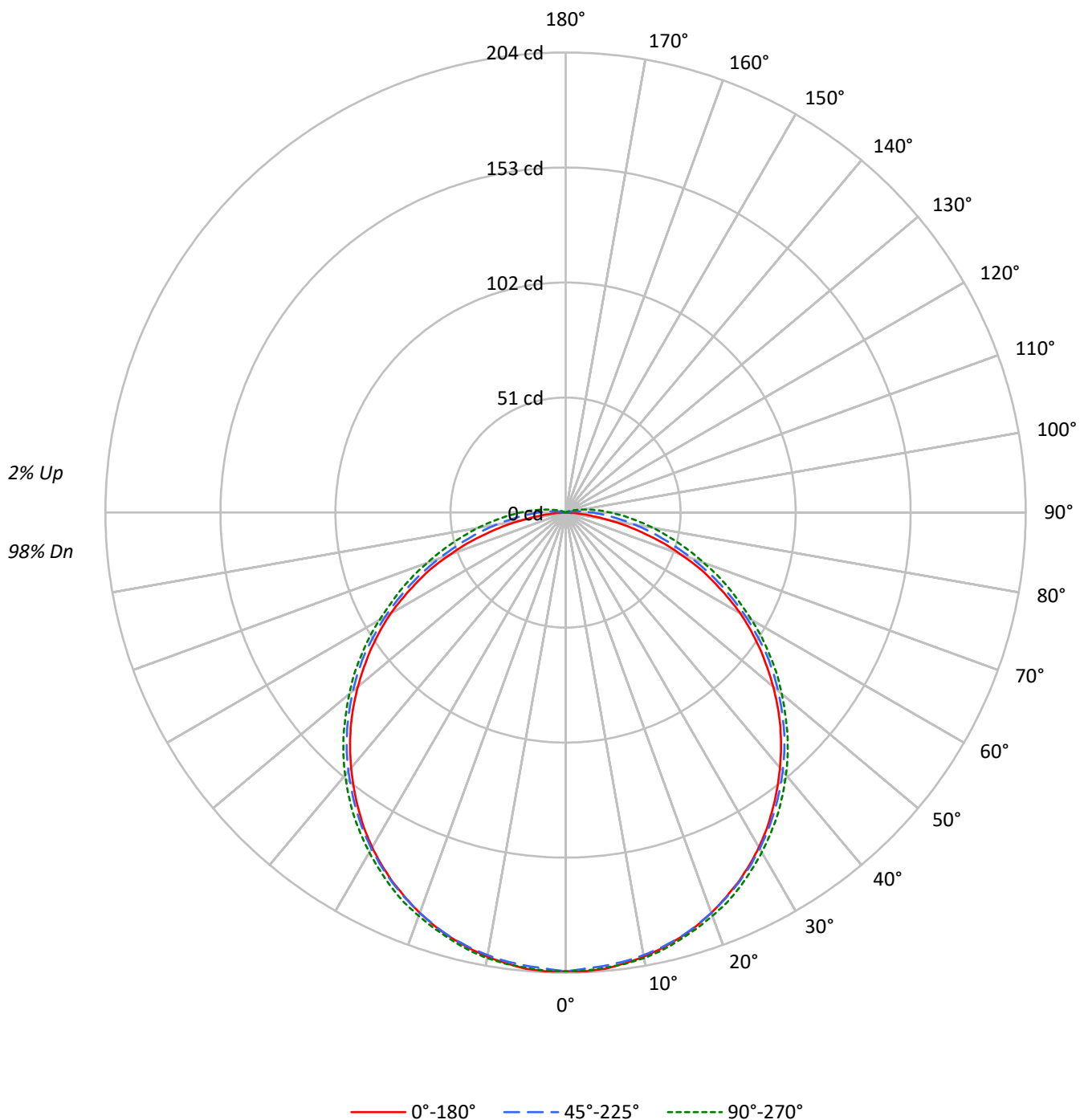
Input Watts (W): 5.8  
Input Voltage (V): NR  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT

| 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  |     |     |     | 0   |
| RW  | 70  | 50  | 30  | 10  | 70  | 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 |
| 1   | 108 | 102 | 98  | 94  | 105 | 100 | 96  | 92  | 95  | 92  | 89  | 91  | 88  | 86  | 87  | 85  | 83  |
| 2   | 98  | 89  | 82  | 76  | 95  | 87  | 80  | 75  | 83  | 77  | 73  | 79  | 75  | 71  | 76  | 72  | 69  |
| 3   | 89  | 78  | 69  | 63  | 86  | 76  | 68  | 62  | 73  | 66  | 61  | 70  | 64  | 59  | 67  | 62  | 58  |
| 4   | 81  | 69  | 60  | 53  | 79  | 67  | 59  | 52  | 65  | 57  | 52  | 62  | 56  | 51  | 60  | 54  | 50  |
| 5   | 75  | 61  | 52  | 45  | 72  | 60  | 52  | 45  | 58  | 50  | 44  | 56  | 49  | 44  | 54  | 48  | 43  |
| 6   | 69  | 55  | 46  | 40  | 67  | 54  | 46  | 39  | 52  | 45  | 39  | 50  | 44  | 38  | 49  | 43  | 38  |
| 7   | 64  | 50  | 41  | 35  | 62  | 49  | 41  | 35  | 47  | 40  | 34  | 46  | 39  | 34  | 44  | 38  | 34  |
| 8   | 59  | 46  | 37  | 31  | 58  | 45  | 37  | 31  | 43  | 36  | 31  | 42  | 35  | 30  | 41  | 35  | 30  |
| 9   | 55  | 42  | 34  | 28  | 54  | 41  | 33  | 28  | 40  | 33  | 28  | 39  | 32  | 27  | 38  | 32  | 27  |
| 10  | 52  | 39  | 31  | 25  | 51  | 38  | 30  | 25  | 37  | 30  | 25  | 36  | 29  | 25  | 35  | 29  | 25  |

**AVERAGE LUMINANCE (cd/sqm):**

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 3284 | 3284 | 3284 |
| 5°  | 3243 | 3187 | 3213 |
| 10° | 3185 | 3106 | 3150 |
| 15° | 3125 | 3023 | 3072 |
| 20° | 3060 | 2931 | 2997 |
| 25° | 2990 | 2840 | 2921 |
| 30° | 2915 | 2742 | 2835 |
| 35° | 2828 | 2639 | 2748 |
| 40° | 2735 | 2531 | 2648 |
| 45° | 2636 | 2416 | 2541 |
| 50° | 2519 | 2287 | 2423 |
| 55° | 2392 | 2148 | 2296 |
| 60° | 2243 | 1973 | 2145 |
| 65° | 2035 | 1779 | 1997 |
| 70° | 1761 | 1560 | 1824 |
| 75° | 1408 | 1322 | 1668 |
| 80° | 946  | 1089 | 1527 |
| 85° | 402  | 852  | 1388 |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 2636 cd/sqm

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CATALOG NUMBER: HVL8-1-LD4-1LO-30-UNV-O-EDD-90

**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 19.2   | 3.1       |
| 10°-20°   | 55.2   | 9.0       |
| 20°-30°   | 83.8   | 13.6      |
| 30°-40°   | 101.3  | 16.5      |
| 40°-50°   | 105.7  | 17.2      |
| 50°-60°   | 96.6   | 15.7      |
| 60°-70°   | 75.3   | 12.3      |
| 70°-80°   | 47.1   | 7.7       |
| 80°-90°   | 21.4   | 3.5       |
| 90°-100°  | 7.2    | 1.2       |
| 100°-110° | 1.8    | 0.3       |
| 110°-120° | 0.3    | 0.0       |
| 120°-130° | 0.0    | 0.0       |
| 130°-140° | 0.0    | 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°    | 158.2  | 25.7      |
| 0°-40°    | 259.5  | 42.2      |
| 0°-60°    | 461.9  | 75.1      |
| 0°-90°    | 605.7  | 98.5      |
| 90°-120°  | 9.2    | 1.5       |
| 90°-150°  | 9.2    | 1.5       |
| 90°-180°  | 9.0    | 1.5       |
| 0°-180°   | 615.0  | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°  | 22.5° | 45° | 67.5° | 90° | Flux |
|------|-----|-------|-----|-------|-----|------|
| 0°   | 203 | 203   | 203 | 203   | 203 |      |
| 5°   | 203 | 203   | 202 | 203   | 203 | 19   |
| 15°  | 195 | 196   | 195 | 196   | 196 | 55   |
| 25°  | 181 | 181   | 181 | 183   | 183 | 83   |
| 35°  | 160 | 161   | 162 | 163   | 164 | 100  |
| 45°  | 135 | 136   | 137 | 138   | 139 | 104  |
| 55°  | 105 | 106   | 108 | 110   | 111 | 94   |
| 65°  | 72  | 74    | 76  | 79    | 80  | 72   |
| 75°  | 37  | 39    | 44  | 50    | 52  | 39   |
| 85°  | 6   | 12    | 20  | 27    | 29  | 8    |
| 90°  | 0   | 4     | 12  | 18    | 20  | 0    |
| 95°  | 0   | 1     | 6   | 11    | 13  | 0    |
| 105° | 0   | 0     | 1   | 3     | 4   | 0    |
| 115° | 0   | 0     | 0   | 0     | 1   | 0    |
| 125° | 0   | 0     | 0   | 0     | 0   | 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°     | 203.4 | 203.4 | 203.4 | 203.4 | 203.4 |
| 2.5°   | 203.6 | 203.4 | 202.4 | 203.4 | 203.3 |
| 5°     | 203.0 | 202.6 | 201.7 | 202.6 | 202.6 |
| 7.5°   | 201.6 | 201.5 | 200.7 | 201.8 | 201.8 |
| 10°    | 200.0 | 200.0 | 199.3 | 200.5 | 200.6 |
| 12.5°  | 197.8 | 198.0 | 197.4 | 198.6 | 198.7 |
| 15°    | 195.3 | 195.6 | 195.1 | 196.2 | 196.1 |
| 17.5°  | 192.4 | 192.6 | 192.2 | 193.5 | 193.4 |
| 20°    | 188.9 | 189.2 | 188.9 | 190.2 | 190.3 |
| 22.5°  | 185.0 | 185.4 | 185.3 | 186.7 | 187.1 |
| 25°    | 180.9 | 181.1 | 181.3 | 182.8 | 183.1 |
| 27.5°  | 176.4 | 176.6 | 176.9 | 178.3 | 178.6 |
| 30°    | 171.4 | 171.8 | 172.1 | 173.6 | 174.0 |
| 32.5°  | 166.1 | 166.5 | 167.0 | 168.8 | 169.0 |
| 35°    | 160.2 | 160.9 | 161.5 | 163.2 | 163.8 |
| 37.5°  | 154.2 | 155.1 | 155.7 | 157.5 | 158.0 |
| 40°    | 147.9 | 148.8 | 149.8 | 151.7 | 152.0 |
| 42.5°  | 141.4 | 142.4 | 143.6 | 145.2 | 145.8 |
| 45°    | 134.7 | 135.9 | 137.0 | 138.4 | 139.1 |
| 47.5°  | 127.6 | 128.8 | 130.1 | 131.7 | 132.1 |
| 50°    | 120.2 | 121.6 | 123.0 | 124.5 | 125.2 |
| 52.5°  | 112.6 | 114.3 | 115.9 | 117.5 | 118.2 |
| 55°    | 105.2 | 106.4 | 108.4 | 109.9 | 110.7 |
| 57.5°  | 97.4  | 98.4  | 100.2 | 102.8 | 103.2 |
| 60°    | 89.5  | 90.4  | 92.3  | 94.4  | 95.2  |
| 62.5°  | 80.7  | 82.0  | 84.0  | 86.6  | 87.4  |
| 65°    | 72.3  | 73.5  | 76.0  | 79.1  | 80.3  |
| 67.5°  | 64.1  | 64.5  | 67.8  | 70.9  | 72.9  |
| 70°    | 54.4  | 56.0  | 59.8  | 63.7  | 65.2  |
| 72.5°  | 46.0  | 47.7  | 51.8  | 56.4  | 58.3  |
| 75°    | 36.6  | 38.8  | 44.5  | 49.8  | 51.7  |
| 77.5°  | 28.3  | 30.8  | 37.8  | 43.2  | 45.3  |
| 80°    | 19.8  | 23.6  | 31.3  | 37.3  | 39.7  |
| 82.5°  | 12.4  | 17.2  | 25.4  | 31.7  | 33.8  |
| 85°    | 6.3   | 11.7  | 20.1  | 26.6  | 28.9  |
| 87.5°  | 1.7   | 7.6   | 15.6  | 21.8  | 24.2  |
| 90°    | 0.0   | 4.4   | 11.8  | 17.8  | 19.9  |
| 92.5°  | 0.0   | 2.4   | 8.8   | 14.1  | 16.4  |
| 95°    | 0.0   | 1.2   | 6.1   | 11.1  | 12.9  |
| 97.5°  | 0.0   | 0.5   | 4.2   | 8.4   | 10.1  |
| 100°   | 0.0   | 0.2   | 2.7   | 6.1   | 7.6   |
| 102.5° | 0.1   | 0.1   | 1.7   | 4.4   | 5.6   |
| 105°   | 0.1   | 0.1   | 1.0   | 3.0   | 4.0   |
| 107.5° | 0.1   | 0.1   | 0.6   | 2.0   | 2.7   |
| 110°   | 0.1   | 0.1   | 0.3   | 1.2   | 1.8   |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°  | 22.5° | 45° | 67.5° | 90° |
|--------|-----|-------|-----|-------|-----|
| 112.5° | 0.1 | 0.1   | 0.2 | 0.8   | 1.2 |
| 115°   | 0.1 | 0.1   | 0.2 | 0.5   | 0.8 |
| 117.5° | 0.0 | 0.0   | 0.0 | 0.0   | 0.0 |
| 120°   | 0.0 | 0.0   | 0.0 | 0.0   | 0.0 |
| 122.5° | 0.0 | 0.0   | 0.0 | 0.0   | 0.0 |
| 125°   | 0.0 | 0.0   | 0.0 | 0.0   | 0.0 |
| 127.5° | 0.0 | 0.0   | 0.0 | 0.0   | 0.0 |
| 130°   | 0.0 | 0.0   | 0.0 | 0.0   | 0.0 |
| 132.5° | 0.0 | 0.0   | 0.0 | 0.0   | 0.0 |
| 135°   | 0.0 | 0.0   | 0.0 | 0.0   | 0.0 |
| 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)