

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: P517163

Luminaire Tested: HVL12-1-LD4-1LO-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: P517163  
Test Lab: INNOVATION CENTER  
Issue Date: 4/27/2021  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: FAIL-SAFE  
Catalog Number: HVL12-1-LD4-1LO-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: 615.0 lumens  
Efficiency: N/A  
Efficacy: 104.2 lumens/watt  
Spacing Criteria (0/90/45): 1.18 / 1.32 / 1.37  
Luminous Opening: Rectangular w/ Sides (W: 1' x L: 1' x H: 0.17')  
CIE Type: Direct

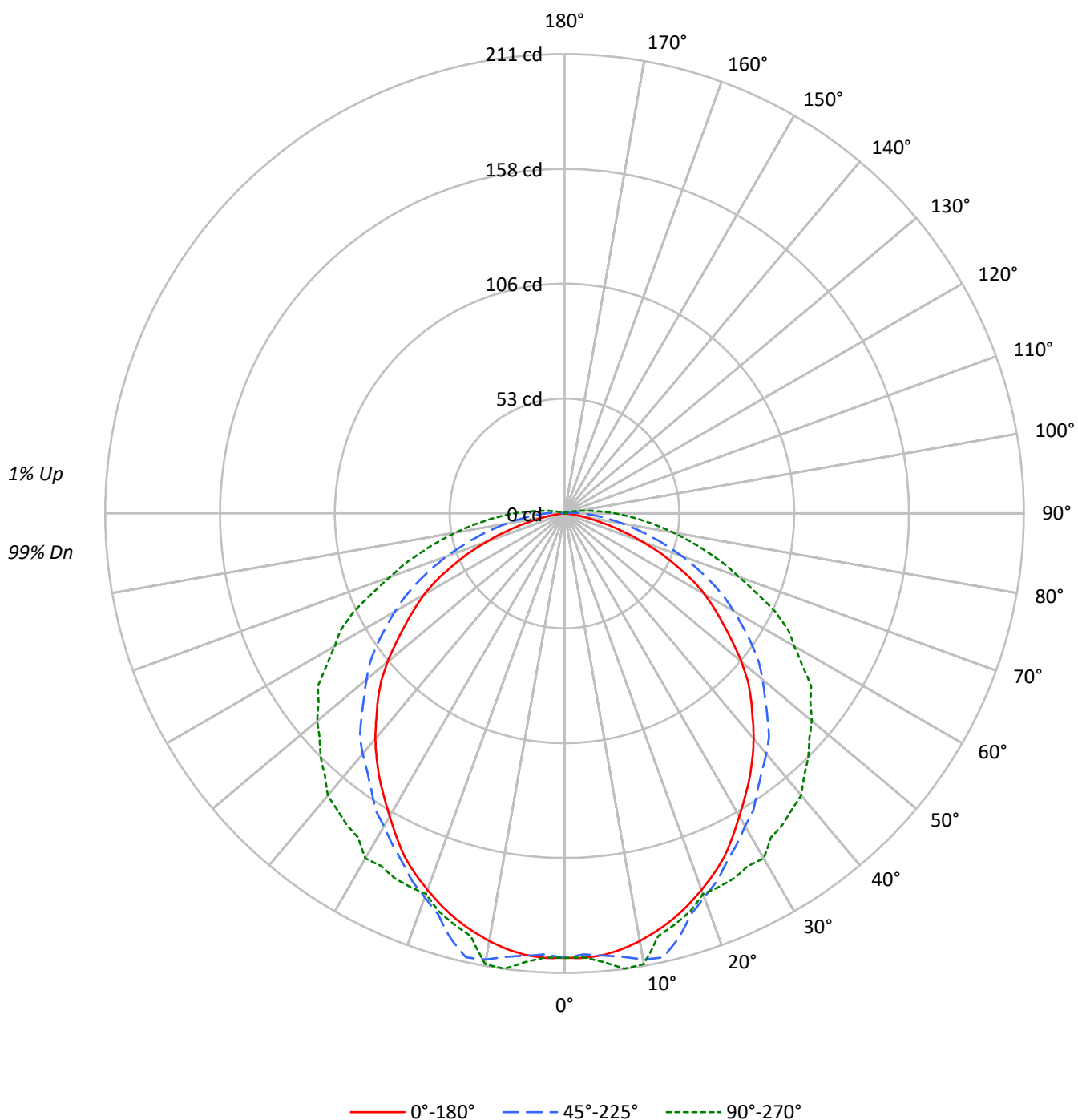
Input Watts (W): 5.9  
Input Voltage (V): NR  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT

| 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  | 45  | 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°  | 2197 | 2197 | 2197 |
| 5°  | 2168 | 2159 | 2202 |
| 10° | 2117 | 2183 | 2232 |
| 15° | 2057 | 2118 | 2085 |
| 20° | 1987 | 1979 | 2009 |
| 25° | 1916 | 1889 | 2037 |
| 30° | 1821 | 1815 | 2074 |
| 35° | 1745 | 1745 | 2053 |
| 40° | 1667 | 1692 | 2084 |
| 45° | 1581 | 1624 | 2067 |
| 50° | 1484 | 1552 | 2072 |
| 55° | 1354 | 1476 | 2096 |
| 60° | 1243 | 1374 | 2036 |
| 65° | 1060 | 1254 | 2006 |
| 70° | 825  | 1098 | 1839 |
| 75° | 549  | 914  | 1731 |
| 80° | 274  | 727  | 1619 |
| 85° | 81   | 538  | 1522 |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 90°

Vertical Angle: 55°

Luminance: 2096 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 19.6   | 3.2       |
| 10°-20°   | 55.9   | 9.1       |
| 20°-30°   | 83.1   | 13.5      |
| 30°-40°   | 99.9   | 16.2      |
| 40°-50°   | 105.2  | 17.1      |
| 50°-60°   | 97.6   | 15.9      |
| 60°-70°   | 77.2   | 12.5      |
| 70°-80°   | 47.1   | 7.7       |
| 80°-90°   | 20.5   | 3.3       |
| 90°-100°  | 6.4    | 1.0       |
| 100°-110° | 1.4    | 0.2       |
| 110°-120° | 0.6    | 0.1       |
| 120°-130° | 0.3    | 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°    | 158.6  | 25.8      |
| 0°-40°    | 258.6  | 42.0      |
| 0°-60°    | 461.3  | 75.0      |
| 0°-90°    | 606.2  | 98.6      |
| 90°-120°  | 8.4    | 1.4       |
| 90°-150°  | 8.8    | 1.4       |
| 90°-180°  | 9.0    | 1.5       |
| 0°-180°   | 615.0  | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°  | 22.5° | 45° | 67.5° | 90° | Flux |
|------|-----|-------|-----|-------|-----|------|
| 0°   | 204 | 204   | 204 | 204   | 204 |      |
| 5°   | 204 | 203   | 204 | 206   | 207 | 19   |
| 15°  | 193 | 200   | 202 | 195   | 196 | 54   |
| 25°  | 174 | 185   | 176 | 182   | 185 | 80   |
| 35°  | 148 | 152   | 155 | 169   | 174 | 93   |
| 45°  | 121 | 122   | 132 | 153   | 158 | 93   |
| 55°  | 89  | 91    | 105 | 128   | 138 | 80   |
| 65°  | 56  | 58    | 74  | 98    | 107 | 56   |
| 75°  | 21  | 28    | 41  | 64    | 68  | 23   |
| 85°  | 2   | 7     | 16  | 31    | 36  | 3    |
| 90°  | 0   | 2     | 8   | 20    | 23  | 0    |
| 95°  | 0   | 0     | 4   | 11    | 13  | 0    |
| 105° | 0   | 0     | 1   | 2     | 3   | 0    |
| 115° | 0   | 0     | 1   | 1     | 1   | 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°     | 204.1 | 204.1 | 204.1 | 204.1 | 204.1 |
| 2.5°   | 204.4 | 203.9 | 202.7 | 203.8 | 204.1 |
| 5°     | 203.6 | 203.2 | 203.9 | 206.2 | 206.8 |
| 7.5°   | 201.9 | 203.5 | 205.4 | 209.6 | 210.9 |
| 10°    | 199.4 | 202.4 | 208.0 | 211.5 | 210.2 |
| 12.5°  | 196.3 | 201.4 | 208.9 | 202.0 | 198.8 |
| 15°    | 192.8 | 200.2 | 202.1 | 195.4 | 195.5 |
| 17.5°  | 188.6 | 199.1 | 193.1 | 192.9 | 191.7 |
| 20°    | 184.0 | 195.6 | 187.6 | 187.3 | 186.0 |
| 22.5°  | 179.2 | 191.0 | 182.8 | 182.1 | 185.6 |
| 25°    | 173.9 | 185.0 | 176.5 | 181.8 | 184.8 |
| 27.5°  | 167.3 | 177.1 | 171.3 | 178.8 | 182.5 |
| 30°    | 160.6 | 168.9 | 165.9 | 176.4 | 182.9 |
| 32.5°  | 154.3 | 160.4 | 161.5 | 175.5 | 176.5 |
| 35°    | 148.3 | 152.5 | 154.7 | 168.8 | 174.5 |
| 37.5°  | 141.8 | 142.9 | 149.0 | 166.0 | 171.5 |
| 40°    | 135.2 | 134.4 | 144.2 | 161.4 | 169.1 |
| 42.5°  | 128.0 | 127.8 | 139.1 | 159.2 | 163.0 |
| 45°    | 121.2 | 121.8 | 131.8 | 152.7 | 158.4 |
| 47.5°  | 114.3 | 115.0 | 124.9 | 145.6 | 152.6 |
| 50°    | 106.2 | 107.1 | 118.7 | 139.2 | 148.3 |
| 52.5°  | 97.5  | 99.2  | 112.7 | 133.2 | 142.4 |
| 55°    | 89.3  | 90.7  | 105.1 | 128.1 | 138.3 |
| 57.5°  | 81.8  | 82.7  | 97.3  | 121.7 | 129.4 |
| 60°    | 74.4  | 74.6  | 89.9  | 114.5 | 121.9 |
| 62.5°  | 66.0  | 66.4  | 82.3  | 106.1 | 115.9 |
| 65°    | 56.5  | 58.3  | 74.1  | 98.0  | 106.9 |
| 67.5°  | 47.7  | 50.8  | 65.7  | 90.6  | 95.3  |
| 70°    | 38.2  | 43.5  | 57.5  | 81.9  | 85.2  |
| 72.5°  | 29.5  | 35.7  | 49.1  | 72.2  | 76.8  |
| 75°    | 21.4  | 28.3  | 41.3  | 63.5  | 67.5  |
| 77.5°  | 14.4  | 21.5  | 34.0  | 53.8  | 59.1  |
| 80°    | 8.6   | 15.7  | 27.4  | 44.9  | 50.8  |
| 82.5°  | 4.4   | 10.5  | 21.3  | 37.6  | 43.0  |
| 85°    | 1.9   | 6.7   | 16.1  | 31.2  | 35.8  |
| 87.5°  | 0.5   | 3.8   | 11.9  | 25.2  | 29.2  |
| 90°    | 0.0   | 2.0   | 8.4   | 19.8  | 23.3  |
| 92.5°  | 0.0   | 1.0   | 5.9   | 15.0  | 17.7  |
| 95°    | 0.0   | 0.5   | 3.7   | 10.9  | 13.3  |
| 97.5°  | 0.0   | 0.3   | 2.2   | 7.7   | 9.7   |
| 100°   | 0.0   | 0.2   | 1.3   | 5.1   | 6.9   |
| 102.5° | 0.0   | 0.3   | 0.9   | 3.2   | 4.5   |
| 105°   | 0.0   | 0.3   | 0.7   | 2.1   | 3.0   |
| 107.5° | 0.1   | 0.3   | 0.7   | 1.6   | 2.1   |
| 110°   | 0.0   | 0.2   | 0.7   | 1.2   | 1.6   |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°  | 22.5° | 45° | 67.5° | 90° |
|--------|-----|-------|-----|-------|-----|
| 112.5° | 0.1 | 0.2   | 0.7 | 1.0   | 1.2 |
| 115°   | 0.0 | 0.2   | 0.6 | 1.0   | 1.0 |
| 117.5° | 0.1 | 0.1   | 0.5 | 1.0   | 1.0 |
| 120°   | 0.1 | 0.1   | 0.4 | 0.9   | 1.0 |
| 122.5° | 0.1 | 0.1   | 0.3 | 0.8   | 1.0 |
| 125°   | 0.0 | 0.1   | 0.2 | 0.6   | 0.9 |
| 127.5° | 0.1 | 0.1   | 0.2 | 0.5   | 0.7 |
| 130°   | 0.1 | 0.1   | 0.2 | 0.4   | 0.5 |
| 132.5° | 0.1 | 0.1   | 0.1 | 0.3   | 0.4 |
| 135°   | 0.1 | 0.1   | 0.1 | 0.2   | 0.3 |
| 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)