

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: P517718

Luminaire Tested: HVL12-8-LD4-3STD-40-UNV-O-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: P517718  
Test Lab: INNOVATION CENTER  
Issue Date: 4/27/2021  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: FAIL-SAFE  
Catalog Number: HVL12-8-LD4-3STD-40-UNV-O-EDD  
Description: 8 FOOT, 12 INCH WIDE, HVL LED LUMINAIRE, WITH 4000K, 80 CRI LEDS  
Light Source: -  
Ballast/Driver: -

**Summary**

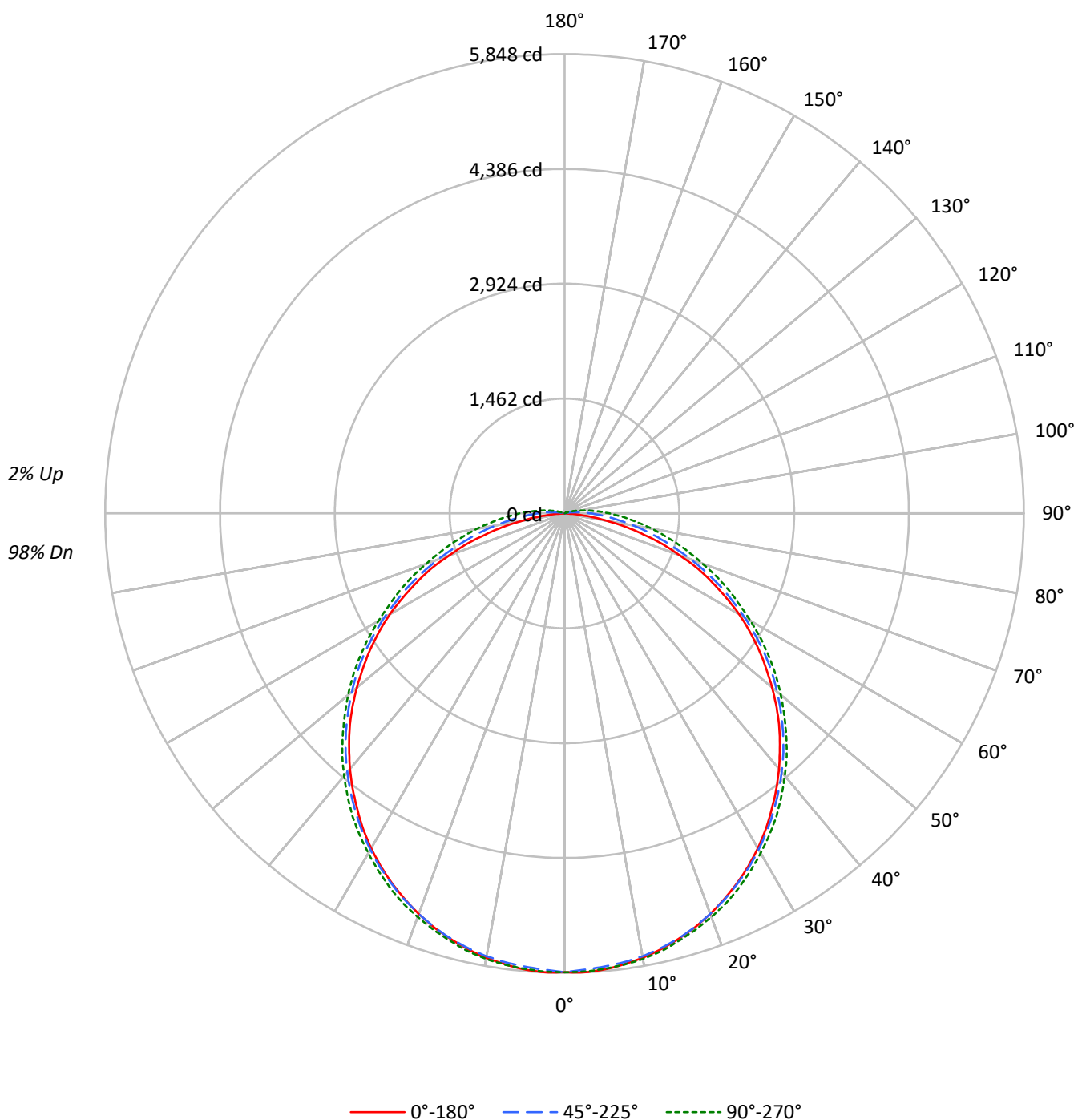
Lumens per Lamp: N/A  
Luminaire Lumens: 17661.0 lumens  
Efficiency: N/A  
Efficacy: 90.0 lumens/watt  
Spacing Criteria (0/90/45): 1.25 / 1.27 / 1.38  
Luminous Opening: Rectangular w/ Sides (W: 1' x L: 8' x H: 0.17')  
CIE Type: Direct  
  
Input Watts (W): 196.2  
Input Voltage (V): NR  
Input Current (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  |
| RCR |     |     |     |     |     |     |     |     |     |     |     |  |     |     |     |  |     |
| 0   | 119 | 119 | 119 | 119 | 116 | 116 | 116 | 116 | 110 | 110 | 110 |  | 105 | 105 | 105 |  | 101 |
| 1   | 108 | 102 | 98  | 94  | 105 | 100 | 96  | 92  | 95  | 92  | 89  |  | 91  | 88  | 86  |  | 87  |
| 2   | 98  | 89  | 82  | 76  | 95  | 87  | 80  | 75  | 83  | 77  | 73  |  | 79  | 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  | 52  |  | 62  | 56  | 51  |  | 60  |
| 5   | 75  | 61  | 52  | 45  | 72  | 60  | 52  | 45  | 58  | 50  | 44  |  | 56  | 49  | 44  |  | 54  |
| 6   | 69  | 55  | 46  | 40  | 67  | 54  | 46  | 39  | 52  | 45  | 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°  | 7859 | 7859 | 7859 |
| 5°  | 7858 | 7733 | 7747 |
| 10° | 7820 | 7642 | 7645 |
| 15° | 7767 | 7535 | 7510 |
| 20° | 7710 | 7409 | 7378 |
| 25° | 7639 | 7277 | 7242 |
| 30° | 7555 | 7134 | 7080 |
| 35° | 7446 | 6972 | 6921 |
| 40° | 7333 | 6801 | 6726 |
| 45° | 7212 | 6612 | 6513 |
| 50° | 7051 | 6387 | 6281 |
| 55° | 6879 | 6138 | 6022 |
| 60° | 6674 | 5798 | 5710 |
| 65° | 6324 | 5413 | 5409 |
| 70° | 5810 | 4951 | 5053 |
| 75° | 5068 | 4444 | 4757 |
| 80° | 3931 | 3970 | 4536 |
| 85° | 2267 | 3541 | 4412 |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 7212 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 552.8   | 3.1       |
| 10°-20°   | 1585.6  | 9.0       |
| 20°-30°   | 2405.8  | 13.6      |
| 30°-40°   | 2909.0  | 16.5      |
| 40°-50°   | 3035.4  | 17.2      |
| 50°-60°   | 2775.2  | 15.7      |
| 60°-70°   | 2163.4  | 12.2      |
| 70°-80°   | 1353.3  | 7.7       |
| 80°-90°   | 614.7   | 3.5       |
| 90°-100°  | 206.0   | 1.2       |
| 100°-110° | 51.7    | 0.3       |
| 110°-120° | 8.1     | 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°    | 4544.1  | 25.7      |
| 0°-40°    | 7453.1  | 42.2      |
| 0°-60°    | 13263.7 | 75.1      |
| 0°-90°    | 17395.1 | 98.5      |
| 90°-120°  | 265.9   | 1.5       |
| 90°-150°  | 265.9   | 1.5       |
| 90°-180°  | 266.0   | 1.5       |
| 0°-180°   | 17661.0 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 5841 | 5841  | 5841 | 5841  | 5841 |      |
| 5°   | 5829 | 5818  | 5792 | 5819  | 5819 | 554  |
| 15°  | 5607 | 5617  | 5602 | 5633  | 5632 | 1583 |
| 25°  | 5195 | 5200  | 5205 | 5249  | 5257 | 2394 |
| 35°  | 4599 | 4620  | 4639 | 4686  | 4705 | 2879 |
| 45°  | 3869 | 3904  | 3935 | 3974  | 3993 | 2982 |
| 55°  | 3020 | 3056  | 3112 | 3157  | 3178 | 2698 |
| 65°  | 2075 | 2111  | 2184 | 2271  | 2306 | 2053 |
| 75°  | 1051 | 1115  | 1278 | 1431  | 1484 | 1120 |
| 85°  | 182  | 336   | 577  | 763   | 830  | 230  |
| 90°  | 1    | 125   | 340  | 511   | 573  | 7    |
| 95°  | 1    | 33    | 176  | 320   | 369  | 1    |
| 105° | 3    | 4     | 29   | 85    | 114  | 3    |
| 115° | 4    | 4     | 6    | 15    | 22   | 3    |
| 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°     | 5841.2 | 5841.2 | 5841.2 | 5841.2 | 5841.2 |
| 2.5°   | 5848.1 | 5839.8 | 5813.7 | 5839.8 | 5838.4 |
| 5°     | 5828.8 | 5817.8 | 5791.6 | 5819.2 | 5819.2 |
| 7.5°   | 5790.2 | 5786.1 | 5762.7 | 5794.4 | 5794.4 |
| 10°    | 5744.8 | 5743.4 | 5724.1 | 5758.6 | 5759.9 |
| 12.5°  | 5681.5 | 5687.0 | 5669.1 | 5702.1 | 5706.2 |
| 15°    | 5607.1 | 5616.7 | 5601.6 | 5633.3 | 5631.9 |
| 17.5°  | 5525.9 | 5531.4 | 5520.4 | 5556.2 | 5554.8 |
| 20°    | 5425.3 | 5432.2 | 5424.0 | 5461.1 | 5465.3 |
| 22.5°  | 5313.8 | 5323.4 | 5322.1 | 5360.6 | 5371.6 |
| 25°    | 5195.4 | 5199.5 | 5205.0 | 5249.1 | 5257.3 |
| 27.5°  | 5064.6 | 5071.5 | 5081.1 | 5121.0 | 5129.3 |
| 30°    | 4921.4 | 4932.4 | 4943.4 | 4984.7 | 4995.7 |
| 32.5°  | 4769.9 | 4780.9 | 4794.7 | 4848.4 | 4853.9 |
| 35°    | 4599.1 | 4619.8 | 4639.1 | 4685.9 | 4705.2 |
| 37.5°  | 4428.4 | 4454.6 | 4472.5 | 4522.0 | 4537.2 |
| 40°    | 4248.0 | 4274.2 | 4303.1 | 4355.4 | 4365.1 |
| 42.5°  | 4059.4 | 4089.7 | 4124.1 | 4170.9 | 4187.4 |
| 45°    | 3869.3 | 3903.8 | 3935.4 | 3974.0 | 3993.3 |
| 47.5°  | 3664.2 | 3698.6 | 3737.2 | 3781.2 | 3793.6 |
| 50°    | 3452.1 | 3492.0 | 3533.4 | 3574.7 | 3596.7 |
| 52.5°  | 3234.5 | 3282.7 | 3329.6 | 3373.6 | 3394.3 |
| 55°    | 3019.7 | 3055.5 | 3112.0 | 3157.4 | 3178.1 |
| 57.5°  | 2796.7 | 2827.0 | 2877.9 | 2952.3 | 2963.3 |
| 60°    | 2569.5 | 2597.0 | 2649.3 | 2709.9 | 2734.7 |
| 62.5°  | 2318.9 | 2356.0 | 2411.1 | 2488.2 | 2510.3 |
| 65°    | 2075.1 | 2110.9 | 2183.9 | 2270.7 | 2306.5 |
| 67.5°  | 1839.7 | 1852.1 | 1945.7 | 2036.6 | 2094.4 |
| 70°    | 1561.5 | 1608.3 | 1717.1 | 1828.6 | 1872.7 |
| 72.5°  | 1321.9 | 1368.7 | 1488.5 | 1619.3 | 1674.4 |
| 75°    | 1050.6 | 1115.4 | 1277.8 | 1430.7 | 1484.4 |
| 77.5°  | 812.4  | 884.0  | 1085.1 | 1239.3 | 1301.3 |
| 80°    | 567.3  | 678.9  | 897.8  | 1071.3 | 1138.8 |
| 82.5°  | 356.6  | 494.3  | 728.4  | 910.2  | 969.4  |
| 85°    | 181.8  | 336.0  | 577.0  | 762.9  | 830.3  |
| 87.5°  | 48.2   | 217.6  | 448.9  | 626.5  | 695.4  |
| 90°    | 1.4    | 125.3  | 340.1  | 510.9  | 572.8  |
| 92.5°  | 1.4    | 70.2   | 253.4  | 406.2  | 469.6  |
| 95°    | 1.4    | 33.0   | 176.3  | 319.5  | 369.0  |
| 97.5°  | 1.4    | 13.8   | 121.2  | 241.0  | 290.5  |
| 100°   | 1.4    | 6.9    | 77.1   | 174.9  | 217.6  |
| 102.5° | 2.8    | 4.1    | 48.2   | 125.3  | 159.7  |
| 105°   | 2.8    | 4.1    | 28.9   | 85.4   | 114.3  |
| 107.5° | 2.8    | 4.1    | 16.5   | 57.8   | 78.5   |
| 110°   | 4.1    | 4.1    | 9.6    | 35.8   | 52.3   |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°  | 22.5° | 45° | 67.5° | 90°  |
|--------|-----|-------|-----|-------|------|
| 112.5° | 4.1 | 4.1   | 5.5 | 23.4  | 34.4 |
| 115°   | 4.1 | 4.1   | 5.5 | 15.1  | 22.0 |
| 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)