

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: P517359

Luminaire Tested: HVL12-2-LD4-2LO-35-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: P517359  
Test Lab: INNOVATION CENTER  
Issue Date: 4/27/2021  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: FAIL-SAFE  
Catalog Number: HVL12-2-LD4-2LO-35-UNV-C-EDD-90  
Description: 2 FOOT, 12 INCH WIDE, HVL LED LUMINAIRE, WITH 3500K, 90 CRI LEDS  
Light Source: -  
Ballast/Driver: -

**Summary**

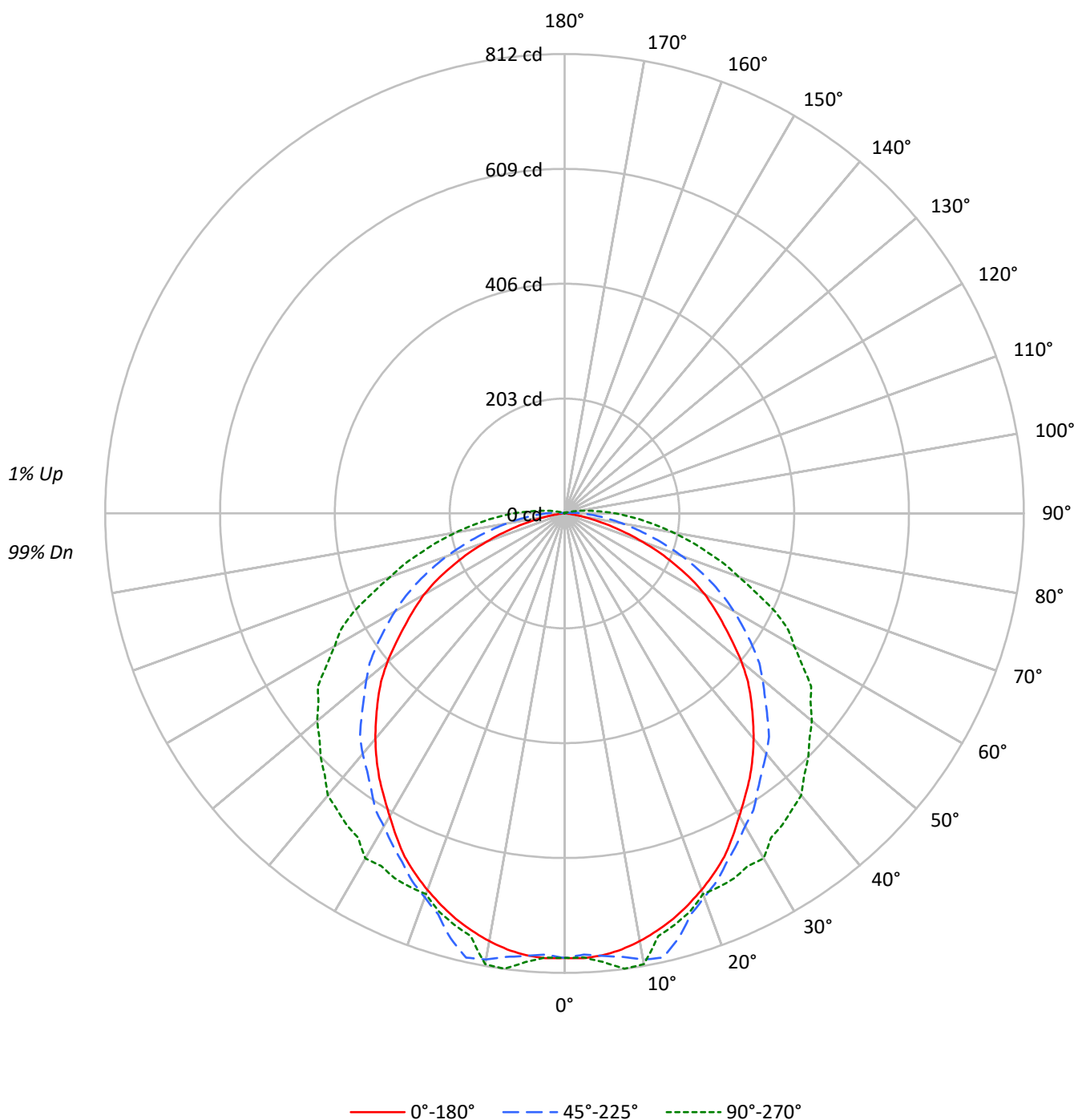
Lumens per Lamp: N/A  
Luminaire Lumens: 2367.0 lumens  
Efficiency: N/A  
Efficacy: 99.9 lumens/watt  
Spacing Criteria (0/90/45): 1.18 / 1.32 / 1.37  
Luminous Opening: Rectangular w/ Sides (W: 1' x L: 2' x H: 0.17')  
CIE Type: Direct  
  
Input Watts (W): 23.7  
Input Voltage (V): NR  
Input Current (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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|    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |    |    |    |    |    |    |    |    |    |  |  |  |  |
|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|----|----|----|----|----|----|----|----|--|--|--|--|
| RF | 20  |     |     |     |     | 20  |     |     |     |     | 20  |     |     |     |     | 20  |     |    |    |    | 20 |    |    |    |    |    |  |  |  |  |
| RC | 80  |     |     |     |     | 70  |     |     |     |     | 50  |     |     |     |     | 30  |     |    |    |    | 10 |    |    |    |    | 0  |  |  |  |  |
| RW | 70  | 50  | 30  | 10  | 70  | 50  | 30  | 10  | 50  | 30  | 10  | 50  | 30  | 10  | 50  | 30  | 10  | 50 | 30 | 10 | 50 | 30 | 10 | 50 | 30 | 10 |  |  |  |  |
| R  | C   | R   | C   | R   | C   | R   | C   | R   | C   | R   | C   | R   | C   | R   | C   | R   | C   | R  | C  | R  | C  | R  | C  | R  | C  | R  |  |  |  |  |
| 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 |    |    |    |    |    |    |    |    |  |  |  |  |

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 4229 | 4229 | 4229 |
| 5°  | 4204 | 4176 | 4239 |
| 10° | 4134 | 4243 | 4294 |
| 15° | 4043 | 4138 | 4014 |
| 20° | 3937 | 3886 | 3866 |
| 25° | 3825 | 3727 | 3918 |
| 30° | 3664 | 3601 | 3992 |
| 35° | 3544 | 3482 | 3952 |
| 40° | 3416 | 3395 | 4011 |
| 45° | 3278 | 3280 | 3976 |
| 50° | 3114 | 3160 | 3988 |
| 55° | 2881 | 3031 | 4034 |
| 60° | 2695 | 2850 | 3918 |
| 65° | 2350 | 2633 | 3860 |
| 70° | 1881 | 2345 | 3540 |
| 75° | 1305 | 1991 | 3328 |
| 80° | 697  | 1634 | 3116 |
| 85° | 234  | 1265 | 2933 |

Luminance: 4034 cd/sqm

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CATALOG NUMBER: HVL12-2-LD4-2LO-35-UNV-C-EDD-90

**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 75.5   | 3.2       |
| 10°-20°   | 215.1  | 9.1       |
| 20°-30°   | 320.0  | 13.5      |
| 30°-40°   | 384.6  | 16.2      |
| 40°-50°   | 404.8  | 17.1      |
| 50°-60°   | 375.6  | 15.9      |
| 60°-70°   | 297.0  | 12.5      |
| 70°-80°   | 181.4  | 7.7       |
| 80°-90°   | 79.0   | 3.3       |
| 90°-100°  | 24.6   | 1.0       |
| 100°-110° | 5.5    | 0.2       |
| 110°-120° | 2.2    | 0.1       |
| 120°-130° | 1.2    | 0.1       |
| 130°-140° | 0.3    | 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°    | 610.5  | 25.8      |
| 0°-40°    | 995.1  | 42.0      |
| 0°-60°    | 1775.6 | 75.0      |
| 0°-90°    | 2333.0 | 98.6      |
| 90°-120°  | 32.4   | 1.4       |
| 90°-150°  | 33.9   | 1.4       |
| 90°-180°  | 34.0   | 1.4       |
| 0°-180°   | 2367.0 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°  | 22.5° | 45° | 67.5° | 90° | Flux |
|------|-----|-------|-----|-------|-----|------|
| 0°   | 786 | 786   | 786 | 786   | 786 |      |
| 5°   | 784 | 782   | 785 | 794   | 796 | 74   |
| 15°  | 742 | 770   | 778 | 752   | 753 | 209  |
| 25°  | 669 | 712   | 679 | 700   | 711 | 307  |
| 35°  | 571 | 587   | 596 | 650   | 672 | 357  |
| 45°  | 467 | 469   | 507 | 588   | 610 | 360  |
| 55°  | 344 | 349   | 405 | 493   | 532 | 309  |
| 65°  | 218 | 224   | 285 | 377   | 412 | 215  |
| 75°  | 82  | 109   | 159 | 244   | 260 | 90   |
| 85°  | 7   | 26    | 62  | 120   | 138 | 11   |
| 90°  | 0   | 8     | 32  | 76    | 90  | 0    |
| 95°  | 0   | 2     | 14  | 42    | 51  | 0    |
| 105° | 0   | 1     | 3   | 8     | 12  | 0    |
| 115° | 0   | 1     | 2   | 4     | 4   | 0    |
| 125° | 0   | 0     | 1   | 2     | 3   | 0    |
| 135° | 0   | 0     | 0   | 1     | 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: P517359

CATALOG NUMBER: HVL12-2-LD4-2LO-35-UNV-C-EDD-90

**CANDELA DISTRIBUTION (FULL):**

|        | 0°    | 22.5° | 45°   | 67.5° | 90°   |
|--------|-------|-------|-------|-------|-------|
| 0°     | 785.7 | 785.7 | 785.7 | 785.7 | 785.7 |
| 2.5°   | 786.7 | 784.6 | 780.3 | 784.4 | 785.6 |
| 5°     | 783.8 | 782.2 | 784.9 | 793.7 | 796.0 |
| 7.5°   | 777.2 | 783.3 | 790.5 | 806.5 | 811.6 |
| 10°    | 767.5 | 779.0 | 800.6 | 814.2 | 808.9 |
| 12.5°  | 755.6 | 775.2 | 804.1 | 777.6 | 765.2 |
| 15°    | 741.9 | 770.3 | 777.9 | 752.1 | 752.6 |
| 17.5°  | 725.7 | 766.3 | 743.1 | 742.5 | 737.9 |
| 20°    | 708.2 | 752.9 | 722.2 | 720.9 | 715.9 |
| 22.5°  | 689.5 | 735.1 | 703.6 | 701.0 | 714.5 |
| 25°    | 669.2 | 711.9 | 679.4 | 699.8 | 711.1 |
| 27.5°  | 643.7 | 681.5 | 659.3 | 688.1 | 702.3 |
| 30°    | 618.0 | 650.1 | 638.6 | 678.8 | 704.1 |
| 32.5°  | 593.8 | 617.3 | 621.7 | 675.3 | 679.4 |
| 35°    | 570.9 | 586.8 | 595.6 | 649.7 | 671.8 |
| 37.5°  | 545.8 | 550.1 | 573.5 | 638.9 | 660.2 |
| 40°    | 520.2 | 517.5 | 554.9 | 621.3 | 650.8 |
| 42.5°  | 492.7 | 491.7 | 535.2 | 612.5 | 627.3 |
| 45°    | 466.6 | 468.6 | 507.2 | 587.6 | 609.5 |
| 47.5°  | 439.8 | 442.6 | 480.6 | 560.2 | 587.4 |
| 50°    | 408.8 | 412.3 | 457.0 | 535.9 | 570.9 |
| 52.5°  | 375.2 | 381.9 | 433.9 | 512.8 | 548.2 |
| 55°    | 343.6 | 349.2 | 404.6 | 493.1 | 532.3 |
| 57.5°  | 314.8 | 318.2 | 374.4 | 468.3 | 497.9 |
| 60°    | 286.5 | 287.3 | 345.9 | 440.8 | 469.1 |
| 62.5°  | 254.0 | 255.4 | 316.6 | 408.3 | 446.2 |
| 65°    | 217.5 | 224.4 | 285.1 | 377.3 | 411.5 |
| 67.5°  | 183.4 | 195.4 | 252.9 | 348.8 | 366.7 |
| 70°    | 146.9 | 167.3 | 221.4 | 315.3 | 328.0 |
| 72.5°  | 113.5 | 137.3 | 189.0 | 277.9 | 295.6 |
| 75°    | 82.3  | 109.0 | 158.9 | 244.2 | 259.6 |
| 77.5°  | 55.4  | 82.6  | 130.8 | 207.1 | 227.4 |
| 80°    | 33.1  | 60.3  | 105.6 | 172.7 | 195.6 |
| 82.5°  | 17.0  | 40.5  | 81.9  | 144.9 | 165.3 |
| 85°    | 7.4   | 25.6  | 61.9  | 120.2 | 138.0 |
| 87.5°  | 2.1   | 14.6  | 45.6  | 97.2  | 112.2 |
| 90°    | 0.2   | 7.7   | 32.5  | 76.2  | 89.8  |
| 92.5°  | 0.2   | 3.7   | 22.9  | 57.6  | 68.0  |
| 95°    | 0.2   | 1.9   | 14.2  | 41.8  | 51.1  |
| 97.5°  | 0.2   | 1.1   | 8.6   | 29.6  | 37.5  |
| 100°   | 0.2   | 1.0   | 5.1   | 19.7  | 26.7  |
| 102.5° | 0.2   | 1.1   | 3.5   | 12.5  | 17.4  |
| 105°   | 0.2   | 1.1   | 2.9   | 8.2   | 11.5  |
| 107.5° | 0.3   | 1.1   | 2.6   | 6.1   | 8.0   |
| 110°   | 0.2   | 1.0   | 2.7   | 4.6   | 6.2   |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°  | 22.5° | 45° | 67.5° | 90° |
|--------|-----|-------|-----|-------|-----|
| 112.5° | 0.3 | 0.8   | 2.6 | 3.8   | 4.6 |
| 115°   | 0.2 | 0.6   | 2.2 | 3.7   | 3.8 |
| 117.5° | 0.3 | 0.5   | 1.8 | 3.7   | 3.8 |
| 120°   | 0.3 | 0.3   | 1.4 | 3.5   | 4.0 |
| 122.5° | 0.3 | 0.3   | 1.1 | 3.2   | 3.8 |
| 125°   | 0.2 | 0.3   | 1.0 | 2.4   | 3.4 |
| 127.5° | 0.3 | 0.3   | 0.8 | 1.9   | 2.6 |
| 130°   | 0.3 | 0.3   | 0.6 | 1.4   | 1.9 |
| 132.5° | 0.3 | 0.3   | 0.5 | 1.1   | 1.4 |
| 135°   | 0.3 | 0.3   | 0.3 | 0.8   | 1.1 |
| 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)