

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: P517507

Luminaire Tested: HVL12-4-LD4-2LO-40-UNV-C-EDD-90

Issue Date: 4/27/2021

Tested By:

Approved By:



NVLAP Lab Code: 200050-0

Cooper Lighting Solutions laboratories have been accredited by National Voluntary Laboratory Accreditation Program (NVLAP) that it adheres to the requirements of ISO/IEC 17025:2005 and appropriate IESNA test methods. This report must not be used to claim product certification, approval or endorsement by NVLAP, NIST or any agency of the Federal Government. Results contained in this report are valid for luminaire sample tested, as supplied by requestor. Information related to the luminaire tested has been supplied by requestor and can affect the validity of the test results. Report shall not be reproduced except in full without approval of Cooper Lighting Solutions Lighting Laboratory. Test performed at address noted above.

**Test Information**

Test Method: LM-79-2019  
Report Number: P517507  
Test Lab: INNOVATION CENTER  
Issue Date: 4/27/2021  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: FAIL-SAFE  
Catalog Number: HVL12-4-LD4-2LO-40-UNV-C-EDD-90  
Description: 4 FOOT, 12 INCH WIDE, HVL LED LUMINAIRE, WITH 4000K, 90 CRI LEDS  
Light Source: -  
Ballast/Driver: -

**Summary**

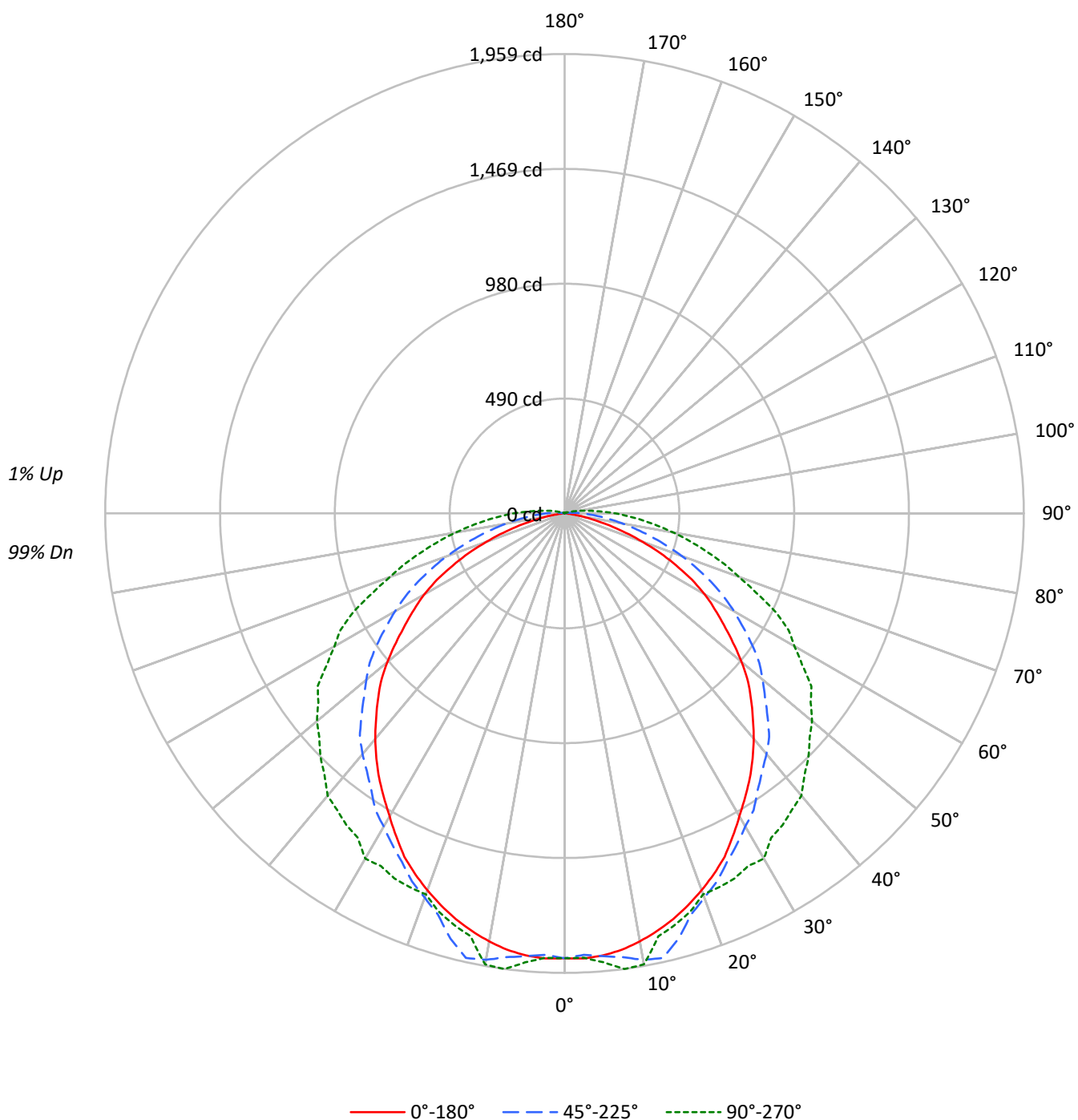
Lumens per Lamp: N/A  
Luminaire Lumens: 5714.0 lumens  
Efficiency: N/A  
Efficacy: 120.5 lumens/watt  
Spacing Criteria (0/90/45): 1.18 / 1.32 / 1.37  
Luminous Opening: Rectangular w/ Sides (W: 1' x L: 4' x H: 0.17')  
CIE Type: Direct  
  
Input Watts (W): 47.4  
Input Voltage (V): NR  
Input Current (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            |

TEST NUMBER: P517507

CATALOG NUMBER: HVL12-4-LD4-2LO-40-UNV-C-EDD-90

### Luminous Intensity Polar Plot



TEST NUMBER: P517507

CATALOG NUMBER: HVL12-4-LD4-2LO-40-UNV-C-EDD-90

**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°  | 5104 | 5104 | 5104 |
| 5°  | 5092 | 5053 | 5116 |
| 10° | 5026 | 5147 | 5184 |
| 15° | 4934 | 5033 | 4845 |
| 20° | 4823 | 4738 | 4666 |
| 25° | 4705 | 4557 | 4730 |
| 30° | 4527 | 4415 | 4818 |
| 35° | 4399 | 4281 | 4770 |
| 40° | 4262 | 4188 | 4841 |
| 45° | 4115 | 4061 | 4799 |
| 50° | 3936 | 3928 | 4813 |
| 55° | 3673 | 3786 | 4870 |
| 60° | 3472 | 3580 | 4730 |
| 65° | 3069 | 3329 | 4660 |
| 70° | 2504 | 2993 | 4272 |
| 75° | 1787 | 2574 | 4017 |
| 80° | 1003 | 2153 | 3761 |
| 85° | 372  | 1720 | 3540 |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 90°

Vertical Angle: 55°

Luminance: 4870 cd/sqm

TEST NUMBER: P517507

CATALOG NUMBER: HVL12-4-LD4-2LO-40-UNV-C-EDD-90

**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 182.3  | 3.2       |
| 10°-20°   | 519.1  | 9.1       |
| 20°-30°   | 772.4  | 13.5      |
| 30°-40°   | 928.5  | 16.2      |
| 40°-50°   | 977.2  | 17.1      |
| 50°-60°   | 906.8  | 15.9      |
| 60°-70°   | 717.0  | 12.5      |
| 70°-80°   | 438.0  | 7.7       |
| 80°-90°   | 190.8  | 3.3       |
| 90°-100°  | 59.4   | 1.0       |
| 100°-110° | 13.3   | 0.2       |
| 110°-120° | 5.4    | 0.1       |
| 120°-130° | 3.0    | 0.1       |
| 130°-140° | 0.8    | 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°    | 1473.9 | 25.8      |
| 0°-40°    | 2402.3 | 42.0      |
| 0°-60°    | 4286.3 | 75.0      |
| 0°-90°    | 5632.1 | 98.6      |
| 90°-120°  | 78.1   | 1.4       |
| 90°-150°  | 82.0   | 1.4       |
| 90°-180°  | 82.0   | 1.4       |
| 0°-180°   | 5714.0 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 1897 | 1897  | 1897 | 1897  | 1897 |      |
| 5°   | 1892 | 1888  | 1895 | 1916  | 1922 | 179  |
| 15°  | 1791 | 1860  | 1878 | 1816  | 1817 | 504  |
| 25°  | 1616 | 1719  | 1640 | 1689  | 1717 | 742  |
| 35°  | 1378 | 1416  | 1438 | 1568  | 1622 | 861  |
| 45°  | 1126 | 1131  | 1224 | 1418  | 1471 | 868  |
| 55°  | 830  | 843   | 977  | 1190  | 1285 | 745  |
| 65°  | 525  | 542   | 688  | 911   | 993  | 520  |
| 75°  | 199  | 263   | 384  | 590   | 627  | 217  |
| 85°  | 18   | 62    | 150  | 290   | 333  | 28   |
| 90°  | 0    | 18    | 78   | 184   | 217  | 1    |
| 95°  | 0    | 5     | 34   | 101   | 123  | 0    |
| 105° | 0    | 3     | 7    | 20    | 28   | 1    |
| 115° | 0    | 2     | 5    | 9     | 9    | 1    |
| 125° | 0    | 1     | 2    | 6     | 8    | 1    |
| 135° | 1    | 1     | 1    | 2     | 3    | 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: P517507

CATALOG NUMBER: HVL12-4-LD4-2LO-40-UNV-C-EDD-90

**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 1896.7 | 1896.7 | 1896.7 | 1896.7 | 1896.7 |
| 2.5°   | 1899.1 | 1894.0 | 1883.6 | 1893.6 | 1896.4 |
| 5°     | 1892.1 | 1888.2 | 1894.8 | 1916.1 | 1921.5 |
| 7.5°   | 1876.3 | 1890.9 | 1908.3 | 1947.0 | 1959.3 |
| 10°    | 1852.7 | 1880.5 | 1932.7 | 1965.5 | 1952.8 |
| 12.5°  | 1824.1 | 1871.2 | 1941.2 | 1877.0 | 1847.3 |
| 15°    | 1790.9 | 1859.6 | 1877.8 | 1815.6 | 1816.8 |
| 17.5°  | 1751.8 | 1850.0 | 1794.0 | 1792.4 | 1781.2 |
| 20°    | 1709.7 | 1817.5 | 1743.3 | 1740.3 | 1728.3 |
| 22.5°  | 1664.5 | 1774.6 | 1698.5 | 1692.3 | 1724.8 |
| 25°    | 1615.5 | 1718.6 | 1640.2 | 1689.3 | 1716.7 |
| 27.5°  | 1554.0 | 1645.2 | 1591.5 | 1661.0 | 1695.4 |
| 30°    | 1491.8 | 1569.5 | 1541.7 | 1638.6 | 1699.7 |
| 32.5°  | 1433.5 | 1490.3 | 1500.7 | 1630.1 | 1640.2 |
| 35°    | 1378.2 | 1416.5 | 1437.7 | 1568.3 | 1621.6 |
| 37.5°  | 1317.6 | 1328.0 | 1384.4 | 1542.4 | 1593.8 |
| 40°    | 1255.7 | 1249.2 | 1339.6 | 1499.9 | 1571.0 |
| 42.5°  | 1189.3 | 1187.0 | 1292.1 | 1478.7 | 1514.2 |
| 45°    | 1126.3 | 1131.3 | 1224.4 | 1418.4 | 1471.3 |
| 47.5°  | 1061.8 | 1068.3 | 1160.3 | 1352.3 | 1418.0 |
| 50°    | 986.8  | 995.3  | 1103.1 | 1293.6 | 1378.2 |
| 52.5°  | 905.7  | 921.9  | 1047.5 | 1238.0 | 1323.3 |
| 55°    | 829.6  | 843.1  | 976.8  | 1190.4 | 1285.1 |
| 57.5°  | 760.0  | 768.1  | 903.7  | 1130.5 | 1202.0 |
| 60°    | 691.6  | 693.6  | 835.0  | 1064.1 | 1132.5 |
| 62.5°  | 613.2  | 616.7  | 764.3  | 985.7  | 1077.2 |
| 65°    | 525.1  | 541.7  | 688.1  | 910.7  | 993.4  |
| 67.5°  | 442.8  | 471.8  | 610.5  | 841.9  | 885.2  |
| 70°    | 354.7  | 403.8  | 534.4  | 761.2  | 791.7  |
| 72.5°  | 273.9  | 331.5  | 456.3  | 670.8  | 713.6  |
| 75°    | 198.6  | 263.1  | 383.7  | 589.6  | 626.7  |
| 77.5°  | 133.7  | 199.4  | 315.7  | 500.0  | 549.0  |
| 80°    | 80.0   | 145.7  | 255.0  | 416.9  | 472.2  |
| 82.5°  | 41.0   | 97.8   | 197.8  | 349.7  | 399.1  |
| 85°    | 17.8   | 61.8   | 149.5  | 290.2  | 333.1  |
| 87.5°  | 5.0    | 35.2   | 110.1  | 234.5  | 270.9  |
| 90°    | 0.4    | 18.5   | 78.4   | 183.9  | 216.8  |
| 92.5°  | 0.4    | 8.9    | 55.3   | 139.1  | 164.2  |
| 95°    | 0.4    | 4.6    | 34.4   | 100.8  | 123.3  |
| 97.5°  | 0.4    | 2.7    | 20.9   | 71.5   | 90.4   |
| 100°   | 0.4    | 2.3    | 12.4   | 47.5   | 64.5   |
| 102.5° | 0.4    | 2.7    | 8.5    | 30.1   | 42.1   |
| 105°   | 0.4    | 2.7    | 7.0    | 19.7   | 27.8   |
| 107.5° | 0.8    | 2.7    | 6.2    | 14.7   | 19.3   |
| 110°   | 0.4    | 2.3    | 6.6    | 11.2   | 15.1   |

TEST NUMBER: P517507

CATALOG NUMBER: HVL12-4-LD4-2LO-40-UNV-C-EDD-90

**CANDELA DISTRIBUTION (continued):**

|        | 0°  | 22.5° | 45° | 67.5° | 90°  |
|--------|-----|-------|-----|-------|------|
| 112.5° | 0.8 | 1.9   | 6.2 | 9.3   | 11.2 |
| 115°   | 0.4 | 1.5   | 5.4 | 8.9   | 9.3  |
| 117.5° | 0.8 | 1.2   | 4.3 | 8.9   | 9.3  |
| 120°   | 0.8 | 0.8   | 3.5 | 8.5   | 9.7  |
| 122.5° | 0.8 | 0.8   | 2.7 | 7.7   | 9.3  |
| 125°   | 0.4 | 0.8   | 2.3 | 5.8   | 8.1  |
| 127.5° | 0.8 | 0.8   | 1.9 | 4.6   | 6.2  |
| 130°   | 0.8 | 0.8   | 1.5 | 3.5   | 4.6  |
| 132.5° | 0.8 | 0.8   | 1.2 | 2.7   | 3.5  |
| 135°   | 0.8 | 0.8   | 0.8 | 1.9   | 2.7  |
| 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)