

Scaled data based on original data using
LM-79-08 Approved Method: Electrical and Photometric Measurements of Solid-State
Lighting Products

Test Report Prepared for
Cooper Lighting Solutions
(formerly Eaton)

Brand: METALUX

Report Number: P470196

Luminaire Tested: **VHB2-12-W-UNV-L940-CD-U**

Issue Date: 01/20/2021

Test Information

Test Method: LM-79-08
Report Number: P470196
Test Lab: INNOVATION CENTER(G3)
Issue Date: 01/20/2021
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: METALUX
Catalog Number: VHB2-12-W-UNV-L940-CD-U
Description: VHB2 LED HIGH BAY LUMINAIRE WITH WIDE DISTRIBUTION LENS
Light Source: 4000K CCT, 90 CRI LEDS
Ballast/Driver: ELECTRONIC DRIVER

Summary

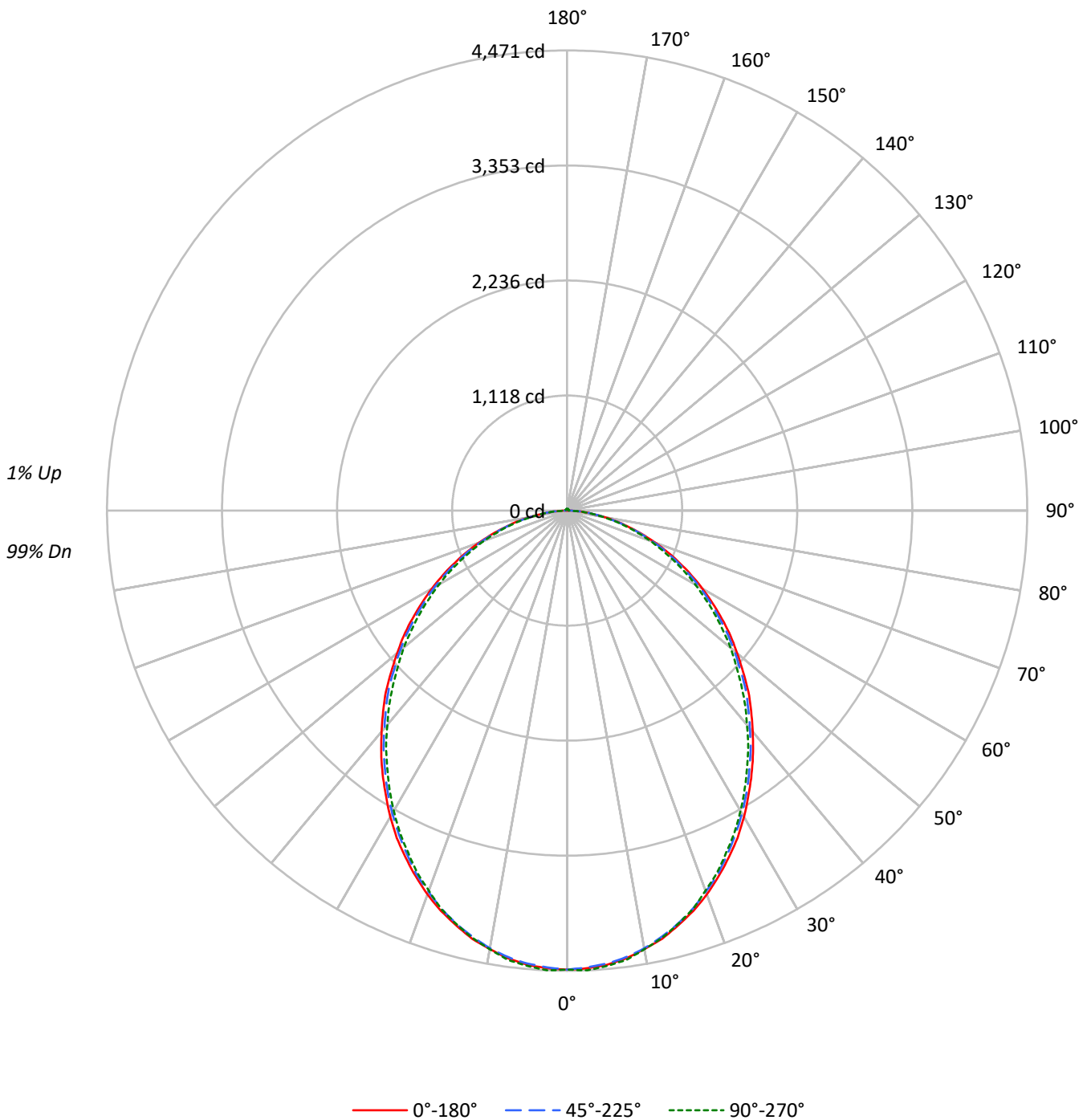
Lumens per Lamp: N/A
Luminaire Lumens: 10792.6 lumens
Efficiency: N/A
Efficacy: 132.6 lumens/watt
Spacing Criteria (0/90/45): 1.16 / 1.14 / 1.25
Luminous Opening: Rectangular (W 1.17' x L: 1.5' x H: 0')
CIE Type: Direct

Input Watts (W): 81.4
Input Voltage (V): 120
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



TEST NUMBER: P470196
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Luminous Intensity Polar Plot





TEST NUMBER: P470196

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COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|----|----|----|----|----|---|--|--|--|----|--|--|--|--|--|--|--|--|---|
| RF | 20 | | | | | | | | | 20 | | | | | | | | | 20 | | | | | | | | | 20 | | | | | | | | | |
| RC | 80 | | | | | | | | | 70 | | | | | | | | | 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 | 0 | | | | | | | | | | | | | |
| RCR | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | 119 | 119 | 119 | 119 | 116 | 116 | 116 | 116 | 111 | 111 | 111 | 106 | 106 | 106 | 101 | 101 | 101 | 99 | | | | | | | | | | | | | | | | | | | |
| 1 | 109 | 104 | 100 | 97 | 106 | 102 | 98 | 95 | 98 | 95 | 92 | 94 | 91 | 89 | 90 | 88 | 86 | 84 | | | | | | | | | | | | | | | | | | | |
| 2 | 100 | 92 | 85 | 79 | 97 | 90 | 84 | 78 | 86 | 81 | 76 | 83 | 78 | 75 | 79 | 76 | 73 | 71 | | | | | | | | | | | | | | | | | | | |
| 3 | 91 | 81 | 73 | 67 | 89 | 79 | 72 | 66 | 76 | 70 | 65 | 73 | 68 | 64 | 71 | 66 | 62 | 60 | | | | | | | | | | | | | | | | | | | |
| 4 | 84 | 72 | 63 | 57 | 81 | 71 | 63 | 57 | 68 | 61 | 56 | 66 | 60 | 55 | 63 | 58 | 54 | 52 | | | | | | | | | | | | | | | | | | | |
| 5 | 77 | 65 | 56 | 49 | 75 | 63 | 55 | 49 | 61 | 54 | 48 | 59 | 53 | 48 | 57 | 52 | 47 | 45 | | | | | | | | | | | | | | | | | | | |
| 6 | 71 | 58 | 50 | 43 | 69 | 57 | 49 | 43 | 56 | 48 | 43 | 54 | 47 | 42 | 52 | 46 | 42 | 40 | | | | | | | | | | | | | | | | | | | |
| 7 | 66 | 53 | 45 | 39 | 65 | 52 | 44 | 38 | 51 | 43 | 38 | 49 | 43 | 38 | 48 | 42 | 37 | 35 | | | | | | | | | | | | | | | | | | | |
| 8 | 62 | 49 | 40 | 35 | 60 | 48 | 40 | 34 | 47 | 39 | 34 | 45 | 39 | 34 | 44 | 38 | 34 | 32 | | | | | | | | | | | | | | | | | | | |
| 9 | 58 | 45 | 37 | 31 | 56 | 44 | 36 | 31 | 43 | 36 | 31 | 42 | 35 | 31 | 41 | 35 | 31 | 29 | | | | | | | | | | | | | | | | | | | |
| 10 | 54 | 41 | 34 | 28 | 53 | 41 | 33 | 28 | 40 | 33 | 28 | 39 | 33 | 28 | 38 | 32 | 28 | 26 | | | | | | | | | | | | | | | | | | | |

AVERAGE LUMINANCE (cd/sqm):

| | 0° | 45° | 90° |
|-----|-------|-------|-------|
| 0° | 27433 | 27433 | 27433 |
| 5° | 27351 | 27281 | 27420 |
| 10° | 27021 | 26969 | 27028 |
| 15° | 26559 | 26470 | 26484 |
| 20° | 25981 | 25793 | 25723 |
| 25° | 25226 | 25001 | 24852 |
| 30° | 24408 | 24129 | 23933 |
| 35° | 23464 | 23160 | 22882 |
| 40° | 22515 | 22168 | 21825 |
| 45° | 21665 | 21324 | 20791 |
| 50° | 20613 | 20297 | 19824 |
| 55° | 19704 | 19276 | 18752 |
| 60° | 18685 | 18270 | 17676 |
| 65° | 17586 | 17161 | 16546 |
| 70° | 16295 | 15991 | 15435 |
| 75° | 14844 | 14644 | 14138 |
| 80° | 13272 | 13053 | 12596 |
| 85° | 11256 | 11256 | 10981 |



TEST NUMBER: P470196

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ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|---------|-----------|
| 0°-10° | 419.3 | 3.9 |
| 10°-20° | 1171.4 | 10.9 |
| 20°-30° | 1697.2 | 15.7 |
| 30°-40° | 1930.4 | 17.9 |
| 40°-50° | 1882.4 | 17.4 |
| 50°-60° | 1607.1 | 14.9 |
| 60°-70° | 1166.7 | 10.8 |
| 70°-80° | 651.4 | 6.0 |
| 80°-90° | 182.9 | 1.7 |
| 90°-100° | 13.0 | 0.1 |
| 100°-110° | 12.8 | 0.1 |
| 110°-120° | 12.6 | 0.1 |
| 120°-130° | 12.1 | 0.1 |
| 130°-140° | 11.4 | 0.1 |
| 140°-150° | 9.9 | 0.1 |
| 150°-160° | 6.9 | 0.1 |
| 160°-170° | 3.8 | 0.0 |
| 170°-180° | 1.1 | 0.0 |
| 0°-30° | 3287.9 | 30.5 |
| 0°-40° | 5218.4 | 48.4 |
| 0°-60° | 8707.8 | 80.7 |
| 0°-90° | 10708.9 | 99.2 |
| 90°-120° | 38.5 | 0.4 |
| 90°-150° | 71.9 | 0.7 |
| 90°-180° | 84.0 | 0.8 |
| 0°-180° | 10792.6 | 100.0 |

CANDELA DISTRIBUTION:

| | 0° | 22.5° | 45° | 67.5° | 90° | Flux |
|------|------|-------|------|-------|------|------|
| 0° | 4460 | 4460 | 4460 | 4460 | 4460 | |
| 5° | 4430 | 4420 | 4418 | 4434 | 4441 | 420 |
| 15° | 4171 | 4164 | 4157 | 4156 | 4159 | 1175 |
| 25° | 3717 | 3704 | 3684 | 3670 | 3662 | 1711 |
| 35° | 3125 | 3115 | 3084 | 3056 | 3047 | 1954 |
| 45° | 2491 | 2467 | 2451 | 2406 | 2390 | 1917 |
| 55° | 1837 | 1830 | 1798 | 1760 | 1749 | 1643 |
| 65° | 1208 | 1199 | 1179 | 1152 | 1137 | 1198 |
| 75° | 625 | 628 | 616 | 601 | 595 | 668 |
| 85° | 160 | 163 | 160 | 155 | 156 | 174 |
| 90° | 11 | 12 | 15 | 17 | 16 | 13 |
| 95° | 5 | 8 | 12 | 15 | 15 | 5 |
| 105° | 10 | 10 | 12 | 15 | 16 | 10 |
| 115° | 11 | 11 | 12 | 14 | 15 | 11 |
| 125° | 12 | 13 | 13 | 15 | 15 | 11 |
| 135° | 14 | 15 | 15 | 15 | 15 | 10 |
| 145° | 13 | 15 | 16 | 17 | 17 | 8 |
| 155° | 12 | 14 | 16 | 16 | 16 | 6 |
| 165° | 10 | 12 | 14 | 15 | 15 | 3 |
| 175° | 11 | 11 | 12 | 12 | 13 | 1 |
| 180° | 11 | 11 | 11 | 11 | 11 | |



TEST NUMBER: P470196

CATALOG NUMBER: VHB2-12-W-UNV-L940-CD-U

CANDELA DISTRIBUTION (FULL):

| | 0° | 22.5° | 45° | 67.5° | 90° |
|--------|--------|--------|--------|--------|--------|
| 0° | 4460.1 | 4460.1 | 4460.1 | 4460.1 | 4460.1 |
| 2.5° | 4451.1 | 4439.3 | 4441.6 | 4456.2 | 4470.8 |
| 5° | 4429.8 | 4419.7 | 4418.5 | 4433.7 | 4441.0 |
| 7.5° | 4388.2 | 4377.5 | 4377.0 | 4394.4 | 4402.8 |
| 10° | 4326.4 | 4323.6 | 4318.0 | 4329.8 | 4327.5 |
| 12.5° | 4261.8 | 4246.1 | 4243.3 | 4252.8 | 4253.4 |
| 15° | 4170.8 | 4163.5 | 4156.8 | 4156.2 | 4159.0 |
| 17.5° | 4077.6 | 4061.9 | 4057.9 | 4055.7 | 4061.3 |
| 20° | 3969.2 | 3951.8 | 3940.5 | 3938.3 | 3929.8 |
| 22.5° | 3846.1 | 3835.5 | 3824.8 | 3806.3 | 3807.9 |
| 25° | 3717.0 | 3704.0 | 3683.8 | 3670.3 | 3661.9 |
| 27.5° | 3584.9 | 3564.7 | 3543.4 | 3531.0 | 3523.7 |
| 30° | 3436.6 | 3424.3 | 3397.3 | 3374.3 | 3369.8 |
| 32.5° | 3279.4 | 3270.9 | 3244.0 | 3223.8 | 3210.3 |
| 35° | 3124.9 | 3114.8 | 3084.4 | 3055.8 | 3047.4 |
| 37.5° | 2967.6 | 2955.2 | 2929.4 | 2904.1 | 2890.1 |
| 40° | 2804.1 | 2795.2 | 2760.9 | 2730.6 | 2718.2 |
| 42.5° | 2646.3 | 2634.5 | 2603.6 | 2566.5 | 2559.2 |
| 45° | 2490.7 | 2467.1 | 2451.4 | 2405.9 | 2390.2 |
| 47.5° | 2318.2 | 2312.1 | 2278.4 | 2241.9 | 2224.4 |
| 50° | 2154.2 | 2150.3 | 2121.1 | 2080.1 | 2071.7 |
| 52.5° | 2003.7 | 1988.0 | 1961.0 | 1923.9 | 1904.8 |
| 55° | 1837.4 | 1829.5 | 1797.5 | 1759.9 | 1748.7 |
| 57.5° | 1674.5 | 1674.5 | 1640.2 | 1608.2 | 1589.1 |
| 60° | 1518.9 | 1509.4 | 1485.2 | 1454.3 | 1436.9 |
| 62.5° | 1362.2 | 1354.3 | 1333.5 | 1302.6 | 1286.9 |
| 65° | 1208.3 | 1199.3 | 1179.1 | 1151.5 | 1136.9 |
| 67.5° | 1061.1 | 1050.4 | 1037.5 | 1001.6 | 992.0 |
| 70° | 906.1 | 903.8 | 889.2 | 864.5 | 858.3 |
| 72.5° | 766.8 | 764.5 | 747.7 | 725.8 | 719.0 |
| 75° | 624.6 | 628.0 | 616.2 | 601.0 | 594.9 |
| 77.5° | 501.1 | 497.7 | 486.5 | 477.5 | 466.8 |
| 80° | 374.7 | 373.5 | 368.5 | 356.1 | 355.6 |
| 82.5° | 259.0 | 263.5 | 259.5 | 250.5 | 247.2 |
| 85° | 159.5 | 162.9 | 159.5 | 155.0 | 155.6 |
| 87.5° | 71.3 | 72.5 | 68.5 | 61.8 | 57.3 |
| 90° | 11.2 | 12.4 | 14.6 | 17.4 | 16.3 |
| 92.5° | 3.9 | 8.4 | 12.4 | 14.6 | 15.2 |
| 95° | 5.1 | 8.4 | 12.4 | 14.6 | 15.2 |
| 97.5° | 7.3 | 8.4 | 12.4 | 14.6 | 15.7 |
| 100° | 8.4 | 9.0 | 12.4 | 14.6 | 15.7 |
| 102.5° | 9.0 | 9.0 | 12.4 | 14.6 | 15.7 |
| 105° | 9.5 | 9.5 | 11.8 | 14.6 | 15.7 |
| 107.5° | 10.1 | 9.5 | 11.8 | 14.6 | 15.7 |
| 110° | 10.1 | 10.1 | 11.8 | 14.6 | 15.2 |



TEST NUMBER: P470196

CATALOG NUMBER: VHB2-12-W-UNV-L940-CD-U

CANDELA DISTRIBUTION (continued):

| | 0° | 22.5° | 45° | 67.5° | 90° |
|--------|------|-------|------|-------|------|
| 112.5° | 10.7 | 10.7 | 12.4 | 14.0 | 15.2 |
| 115° | 11.2 | 11.2 | 12.4 | 14.0 | 15.2 |
| 117.5° | 11.2 | 11.8 | 12.4 | 14.6 | 15.2 |
| 120° | 11.8 | 12.4 | 12.4 | 14.6 | 14.6 |
| 122.5° | 11.8 | 12.9 | 12.9 | 14.6 | 14.6 |
| 125° | 11.8 | 12.9 | 12.9 | 14.6 | 14.6 |
| 127.5° | 12.4 | 13.5 | 12.9 | 14.6 | 14.6 |
| 130° | 12.9 | 13.5 | 14.0 | 14.6 | 14.6 |
| 132.5° | 12.9 | 14.0 | 14.6 | 15.2 | 14.6 |
| 135° | 13.5 | 14.6 | 15.2 | 15.2 | 15.2 |
| 137.5° | 14.0 | 14.6 | 15.7 | 15.7 | 15.7 |
| 140° | 14.0 | 15.2 | 15.7 | 16.3 | 16.3 |
| 142.5° | 12.9 | 15.2 | 15.7 | 16.9 | 16.9 |
| 145° | 12.9 | 15.2 | 16.3 | 17.4 | 17.4 |
| 147.5° | 12.4 | 14.6 | 15.7 | 17.4 | 17.4 |
| 150° | 12.4 | 14.0 | 15.7 | 16.9 | 16.9 |
| 152.5° | 12.9 | 13.5 | 15.7 | 16.3 | 16.9 |
| 155° | 12.4 | 13.5 | 15.7 | 16.3 | 16.3 |
| 157.5° | 11.8 | 12.9 | 15.2 | 16.3 | 16.9 |
| 160° | 11.2 | 12.9 | 14.6 | 16.3 | 16.3 |
| 162.5° | 10.7 | 12.4 | 14.0 | 15.7 | 16.3 |
| 165° | 10.1 | 11.8 | 13.5 | 15.2 | 15.2 |
| 167.5° | 10.1 | 11.8 | 12.9 | 14.0 | 14.6 |
| 170° | 10.7 | 11.2 | 12.4 | 12.9 | 13.5 |
| 172.5° | 11.2 | 11.2 | 12.4 | 12.4 | 12.4 |
| 175° | 11.2 | 11.2 | 11.8 | 12.4 | 12.9 |
| 177.5° | 11.8 | 11.2 | 11.2 | 12.4 | 12.4 |
| 180° | 11.2 | 11.2 | 11.2 | 11.2 | 11.2 |

(END OF REPORT)