

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: P474103

Luminaire Tested: **24CZ2-145VHE-S-UNV-L840-CD1-U**

Issue Date: 01/28/2021

**Test Information**

Test Method: LM-79-08  
Report Number: P474103  
Test Lab: INNOVATION CENTER(G3)  
Issue Date: 01/28/2021  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: METALUX  
Catalog Number: 24CZ2-145VHE-S-UNV-L840-CD1-U  
Description: 2'X4' TROFFER LED MODULE, VERY HIGH EFFICIENCY,SMOOTH LENS  
Light Source: 4000K CCT, 80 CRI LEDS  
Ballast/Driver: ELECTRONIC DRIVER

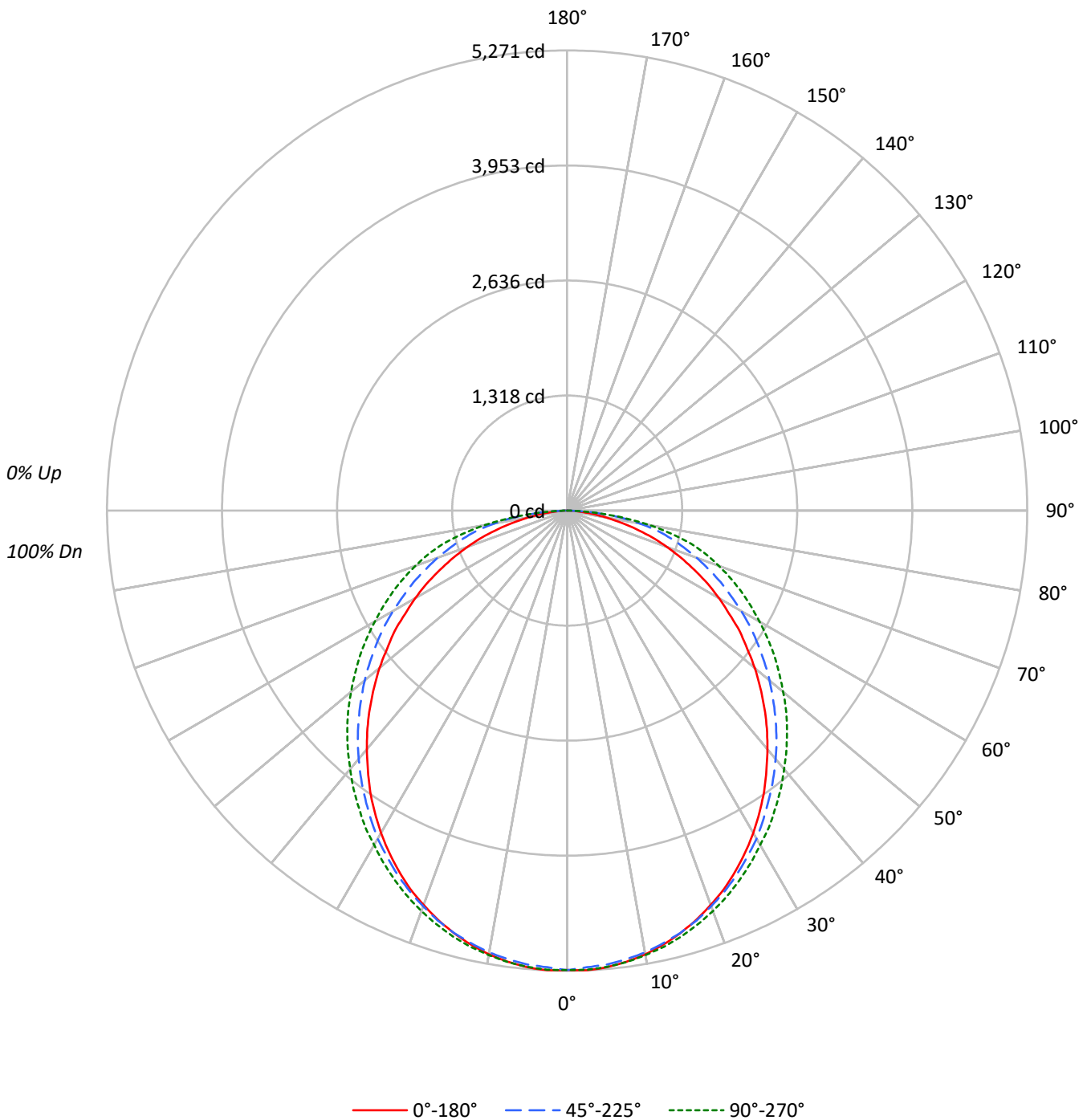
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 15079.4 lumens  
Efficiency: N/A  
Efficacy: 143.2 lumens/watt  
Spacing Criteria (0/90/45): 1.21 / 1.25 / 1.35  
Luminous Opening: Rectangular (W 2' x L: 4' x H: 0')  
CIE Type: Direct  
  
Input Watts (W): 105.3  
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: 25 FT



TEST NUMBER: P474103  
CATALOG NUMBER: 24CZ2-145VHE-S-UNV-L840-CD1-U

### Luminous Intensity Polar Plot





TEST NUMBER: P474103

CATALOG NUMBER: 24CZ2-145VHE-S-UNV-L840-CD1-U

**COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:**

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 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  | 0   |
| RCR |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| 0   | 119 | 119 | 119 | 119 | 116 | 116 | 116 | 116 | 111 | 111 | 111 | 106 | 106 | 106 | 102 | 102 | 102 | 100 |
| 1   | 108 | 103 | 99  | 95  | 105 | 101 | 97  | 93  | 97  | 93  | 90  | 93  | 90  | 87  | 89  | 87  | 85  | 83  |
| 2   | 98  | 90  | 83  | 77  | 95  | 88  | 81  | 76  | 84  | 79  | 74  | 81  | 76  | 72  | 78  | 74  | 71  | 68  |
| 3   | 89  | 78  | 70  | 63  | 87  | 77  | 69  | 63  | 74  | 67  | 62  | 71  | 65  | 61  | 68  | 64  | 59  | 57  |
| 4   | 82  | 69  | 60  | 54  | 79  | 68  | 60  | 53  | 66  | 58  | 52  | 63  | 57  | 52  | 61  | 55  | 51  | 49  |
| 5   | 75  | 62  | 53  | 46  | 73  | 61  | 52  | 46  | 59  | 51  | 45  | 57  | 50  | 45  | 55  | 49  | 44  | 42  |
| 6   | 69  | 56  | 47  | 40  | 67  | 55  | 46  | 40  | 53  | 45  | 40  | 51  | 44  | 39  | 50  | 44  | 39  | 37  |
| 7   | 64  | 51  | 42  | 35  | 63  | 50  | 41  | 35  | 48  | 41  | 35  | 47  | 40  | 35  | 45  | 39  | 34  | 32  |
| 8   | 60  | 46  | 38  | 32  | 58  | 45  | 37  | 31  | 44  | 37  | 31  | 43  | 36  | 31  | 42  | 35  | 31  | 29  |
| 9   | 56  | 42  | 34  | 28  | 54  | 42  | 34  | 28  | 41  | 33  | 28  | 39  | 33  | 28  | 38  | 32  | 28  | 26  |
| 10  | 52  | 39  | 31  | 26  | 51  | 39  | 31  | 26  | 38  | 30  | 26  | 37  | 30  | 25  | 36  | 30  | 25  | 24  |

**AVERAGE LUMINANCE (cd/sqm):**

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 7082 | 7082 | 7082 |
| 5°  | 7092 | 7049 | 7086 |
| 10° | 7052 | 7022 | 7063 |
| 15° | 6980 | 6976 | 7035 |
| 20° | 6884 | 6905 | 6990 |
| 25° | 6770 | 6828 | 6935 |
| 30° | 6627 | 6742 | 6869 |
| 35° | 6461 | 6623 | 6831 |
| 40° | 6269 | 6526 | 6791 |
| 45° | 6080 | 6424 | 6777 |
| 50° | 5874 | 6336 | 6761 |
| 55° | 5665 | 6258 | 6798 |
| 60° | 5406 | 6199 | 6845 |
| 65° | 5118 | 6174 | 7011 |
| 70° | 4775 | 6207 | 7259 |
| 75° | 4249 | 6386 | 7649 |
| 80° | 3474 | 6525 | 7466 |
| 85° | 2447 | 5698 | 5812 |



TEST NUMBER: P474103

CATALOG NUMBER: 24CZ2-145VHE-S-UNV-L840-CD1-U

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 497.6   | 3.3       |
| 10°-20°   | 1417.2  | 9.4       |
| 20°-30°   | 2124.4  | 14.1      |
| 30°-40°   | 2530.2  | 16.8      |
| 40°-50°   | 2608.9  | 17.3      |
| 50°-60°   | 2380.6  | 15.8      |
| 60°-70°   | 1903.7  | 12.6      |
| 70°-80°   | 1243.4  | 8.2       |
| 80°-90°   | 373.3   | 2.5       |
| 90°-100°  | 0.0     | 0.0       |
| 100°-110° | 0.0     | 0.0       |
| 110°-120° | 0.0     | 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°    | 4039.3  | 26.8      |
| 0°-40°    | 6569.5  | 43.6      |
| 0°-60°    | 11559.0 | 76.7      |
| 0°-90°    | 15079.4 | 100.0     |
| 90°-120°  | 0.0     | 0.0       |
| 90°-150°  | 0.0     | 0.0       |
| 90°-180°  | 0.0     | 0.0       |
| 0°-180°   | 15079.4 | 100.0     |

**CANDELA DISTRIBUTION:**

|     | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|-----|------|-------|------|-------|------|------|
| 0°  | 5263 | 5263  | 5263 | 5263  | 5263 |      |
| 5°  | 5251 | 5241  | 5219 | 5251  | 5246 | 498  |
| 15° | 5011 | 5013  | 5008 | 5050  | 5050 | 1413 |
| 25° | 4560 | 4567  | 4600 | 4666  | 4671 | 2099 |
| 35° | 3933 | 3961  | 4032 | 4134  | 4159 | 2457 |
| 45° | 3195 | 3252  | 3376 | 3517  | 3562 | 2464 |
| 55° | 2415 | 2484  | 2668 | 2844  | 2898 | 2151 |
| 65° | 1608 | 1716  | 1939 | 2130  | 2202 | 1594 |
| 75° | 817  | 954   | 1228 | 1427  | 1471 | 869  |
| 85° | 158  | 285   | 369  | 376   | 376  | 201  |
| 90° | 0    | 0     | 0    | 0     | 0    |      |



TEST NUMBER: P474103

CATALOG NUMBER: 24CZ2-145VHE-S-UNV-L840-CD1-U

**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|-------|--------|--------|--------|--------|--------|
| 0°    | 5263.4 | 5263.4 | 5263.4 | 5263.4 | 5263.4 |
| 2.5°  | 5270.8 | 5263.4 | 5236.2 | 5268.4 | 5263.4 |
| 5°    | 5251.0 | 5241.1 | 5218.8 | 5251.0 | 5246.1 |
| 7.5°  | 5211.4 | 5206.4 | 5184.1 | 5221.3 | 5216.3 |
| 10°   | 5161.8 | 5156.9 | 5139.6 | 5176.7 | 5169.3 |
| 12.5° | 5092.5 | 5090.0 | 5077.6 | 5122.2 | 5117.3 |
| 15°   | 5010.8 | 5013.2 | 5008.3 | 5050.4 | 5050.4 |
| 17.5° | 4916.6 | 4914.2 | 4924.1 | 4976.1 | 4971.1 |
| 20°   | 4807.6 | 4810.1 | 4822.5 | 4882.0 | 4882.0 |
| 22.5° | 4693.7 | 4691.2 | 4718.5 | 4777.9 | 4782.9 |
| 25°   | 4560.0 | 4567.4 | 4599.6 | 4666.5 | 4671.4 |
| 27.5° | 4416.3 | 4428.7 | 4468.3 | 4545.1 | 4552.5 |
| 30°   | 4265.2 | 4280.1 | 4339.5 | 4411.3 | 4421.3 |
| 32.5° | 4099.3 | 4131.5 | 4185.9 | 4277.6 | 4302.4 |
| 35°   | 3933.3 | 3960.6 | 4032.4 | 4133.9 | 4158.7 |
| 37.5° | 3750.0 | 3794.6 | 3876.3 | 3987.8 | 4020.0 |
| 40°   | 3569.2 | 3613.8 | 3715.3 | 3831.8 | 3866.4 |
| 42.5° | 3385.9 | 3433.0 | 3549.4 | 3680.7 | 3717.8 |
| 45°   | 3195.2 | 3252.2 | 3376.0 | 3517.2 | 3561.8 |
| 47.5° | 2999.5 | 3066.4 | 3200.1 | 3353.7 | 3403.3 |
| 50°   | 2806.3 | 2873.2 | 3026.8 | 3185.3 | 3229.9 |
| 52.5° | 2598.3 | 2682.5 | 2846.0 | 3016.9 | 3061.4 |
| 55°   | 2415.0 | 2484.3 | 2667.6 | 2843.5 | 2898.0 |
| 57.5° | 2199.5 | 2293.6 | 2489.3 | 2667.6 | 2719.6 |
| 60°   | 2008.8 | 2095.5 | 2303.5 | 2484.3 | 2543.8 |
| 62.5° | 1815.6 | 1904.7 | 2112.8 | 2318.4 | 2372.9 |
| 65°   | 1607.5 | 1716.5 | 1939.4 | 2130.1 | 2202.0 |
| 67.5° | 1409.4 | 1523.3 | 1751.2 | 1954.3 | 2028.6 |
| 70°   | 1213.7 | 1330.1 | 1577.8 | 1785.8 | 1845.3 |
| 72.5° | 1020.5 | 1141.8 | 1399.4 | 1602.5 | 1671.9 |
| 75°   | 817.4  | 953.6  | 1228.5 | 1426.7 | 1471.3 |
| 77.5° | 626.7  | 777.7  | 1055.2 | 1188.9 | 1221.1 |
| 80°   | 448.3  | 614.3  | 842.1  | 938.7  | 963.5  |
| 82.5° | 294.8  | 455.7  | 629.1  | 681.1  | 673.7  |
| 85°   | 158.5  | 284.8  | 369.1  | 376.5  | 376.5  |
| 87.5° | 61.9   | 113.9  | 116.4  | 89.2   | 84.2   |
| 90°   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |

(END OF REPORT)