

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: P473903

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

Issue Date: 01/28/2021

**Test Information**

Test Method: LM-79-08  
Report Number: P473903  
Test Lab: INNOVATION CENTER(G3)  
Issue Date: 01/28/2021  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: METALUX  
Catalog Number: 24CZ2-145VHE-UNV-L840-CD1-U  
Description: 2'X4' TROFFER LED MODULE, VERY HIGH EFFICIENCY,RIBBED LENS  
Light Source: 4000K CCT, 80 CRI LEDS  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

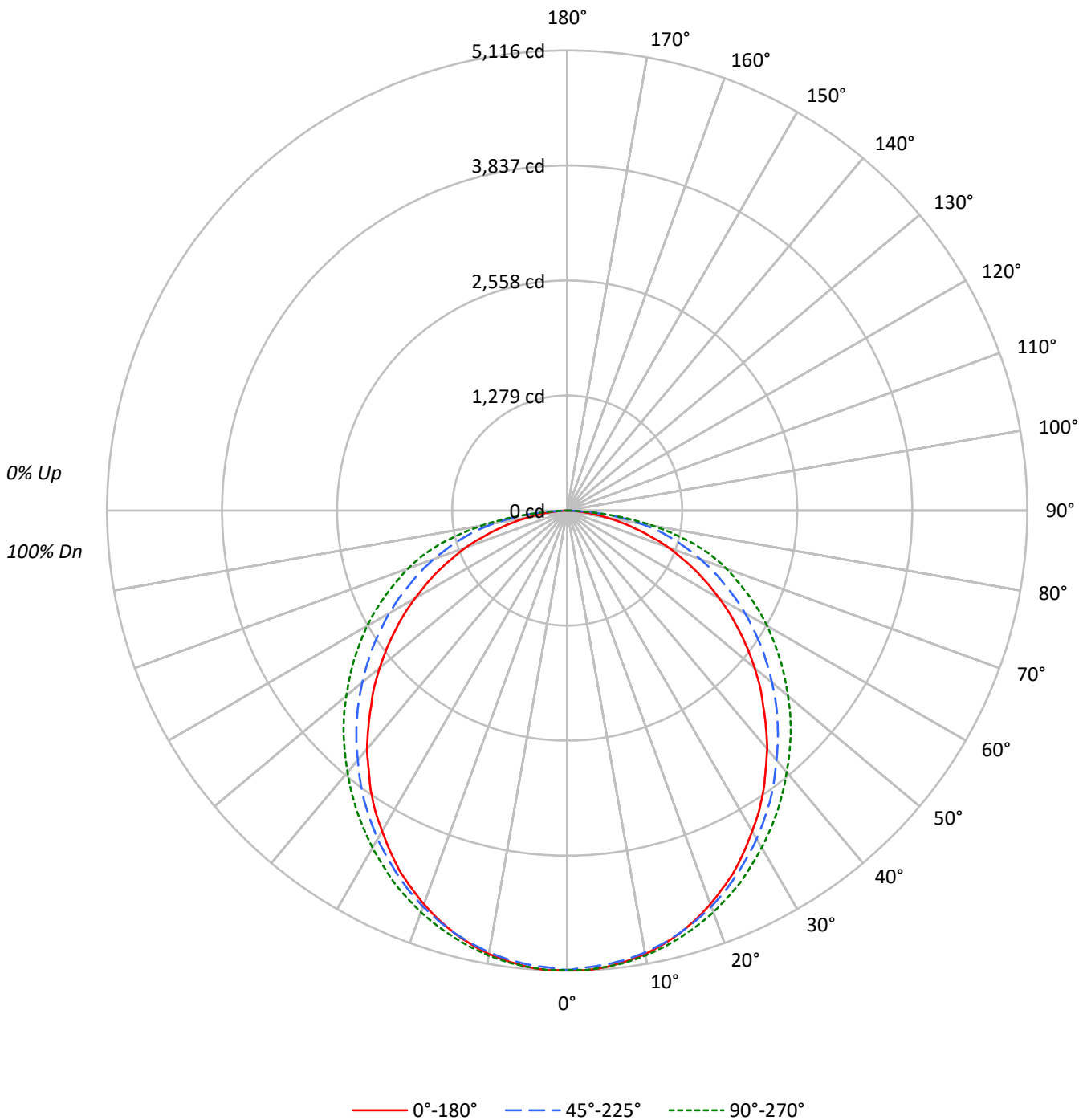
Lumens per Lamp: N/A  
Luminaire Lumens: 14783.4 lumens  
Efficiency: N/A  
Efficacy: 140.4 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.26 / 1.36  
Luminous Opening: Rectangular (W 2' x L: 4' x H: 0')  
CIE Type: Direct

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



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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  | 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  | 89  | 82  | 76  | 95  | 88  | 81  | 75  | 84  | 78  | 74  | 81  | 76  | 72  | 78  | 74  | 70  | 68  |
| 3   | 89  | 78  | 70  | 63  | 87  | 77  | 69  | 63  | 74  | 67  | 61  | 71  | 65  | 60  | 68  | 63  | 59  | 57  |
| 4   | 82  | 69  | 60  | 53  | 79  | 68  | 59  | 53  | 65  | 58  | 52  | 63  | 57  | 51  | 61  | 55  | 51  | 48  |
| 5   | 75  | 62  | 53  | 46  | 73  | 61  | 52  | 46  | 58  | 51  | 45  | 56  | 50  | 44  | 55  | 49  | 44  | 42  |
| 6   | 69  | 56  | 46  | 40  | 67  | 55  | 46  | 40  | 53  | 45  | 39  | 51  | 44  | 39  | 49  | 43  | 39  | 37  |
| 7   | 64  | 50  | 41  | 35  | 62  | 50  | 41  | 35  | 48  | 40  | 35  | 47  | 40  | 35  | 45  | 39  | 34  | 32  |
| 8   | 60  | 46  | 37  | 31  | 58  | 45  | 37  | 31  | 44  | 36  | 31  | 43  | 36  | 31  | 41  | 35  | 31  | 29  |
| 9   | 56  | 42  | 34  | 28  | 54  | 42  | 34  | 28  | 40  | 33  | 28  | 39  | 33  | 28  | 38  | 32  | 28  | 26  |
| 10  | 52  | 39  | 31  | 26  | 51  | 38  | 31  | 26  | 37  | 30  | 25  | 36  | 30  | 25  | 36  | 30  | 25  | 23  |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 6874 | 6874 | 6874 |
| 5°  | 6877 | 6842 | 6877 |
| 10° | 6839 | 6816 | 6862 |
| 15° | 6770 | 6767 | 6833 |
| 20° | 6668 | 6709 | 6805 |
| 25° | 6552 | 6627 | 6772 |
| 30° | 6393 | 6549 | 6724 |
| 35° | 6249 | 6465 | 6696 |
| 40° | 6078 | 6359 | 6670 |
| 45° | 5871 | 6294 | 6690 |
| 50° | 5694 | 6224 | 6709 |
| 55° | 5485 | 6180 | 6784 |
| 60° | 5257 | 6151 | 6909 |
| 65° | 5011 | 6129 | 7087 |
| 70° | 4716 | 6192 | 7413 |
| 75° | 4147 | 6320 | 7710 |
| 80° | 3460 | 6366 | 7439 |
| 85° | 2470 | 5457 | 5530 |



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**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 482.9   | 3.3       |
| 10°-20°   | 1375.6  | 9.3       |
| 20°-30°   | 2063.6  | 14.0      |
| 30°-40°   | 2463.7  | 16.7      |
| 40°-50°   | 2551.9  | 17.3      |
| 50°-60°   | 2349.3  | 15.9      |
| 60°-70°   | 1895.1  | 12.8      |
| 70°-80°   | 1238.2  | 8.4       |
| 80°-90°   | 363.0   | 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°    | 3922.1  | 26.5      |
| 0°-40°    | 6385.8  | 43.2      |
| 0°-60°    | 11287.1 | 76.3      |
| 0°-90°    | 14783.4 | 100.0     |
| 90°-120°  | 0.0     | 0.0       |
| 90°-150°  | 0.0     | 0.0       |
| 90°-180°  | 0.0     | 0.0       |
| 0°-180°   | 14783.4 | 100.0     |

**CANDELA DISTRIBUTION:**

|     | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|-----|------|-------|------|-------|------|------|
| 0°  | 5109 | 5109  | 5109 | 5109  | 5109 |      |
| 5°  | 5092 | 5087  | 5066 | 5094  | 5092 | 483  |
| 15° | 4860 | 4860  | 4858 | 4906  | 4906 | 1369 |
| 25° | 4414 | 4423  | 4464 | 4545  | 4562 | 2029 |
| 35° | 3805 | 3838  | 3936 | 4043  | 4077 | 2377 |
| 45° | 3086 | 3162  | 3308 | 3456  | 3516 | 2385 |
| 55° | 2338 | 2438  | 2634 | 2828  | 2892 | 2093 |
| 65° | 1574 | 1681  | 1925 | 2145  | 2226 | 1556 |
| 75° | 798  | 948   | 1216 | 1426  | 1483 | 851  |
| 85° | 160  | 277   | 354  | 375   | 358  | 198  |
| 90° | 0    | 0     | 0    | 0     | 0    |      |



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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|-------|--------|--------|--------|--------|--------|
| 0°    | 5108.6 | 5108.6 | 5108.6 | 5108.6 | 5108.6 |
| 2.5°  | 5115.8 | 5108.6 | 5082.3 | 5113.4 | 5111.0 |
| 5°    | 5091.9 | 5087.1 | 5065.6 | 5094.3 | 5091.9 |
| 7.5°  | 5053.7 | 5051.3 | 5034.6 | 5065.6 | 5065.6 |
| 10°   | 5005.9 | 5001.1 | 4989.2 | 5025.0 | 5022.6 |
| 12.5° | 4939.0 | 4936.6 | 4929.5 | 4972.5 | 4970.1 |
| 15°   | 4860.2 | 4860.2 | 4857.8 | 4905.6 | 4905.6 |
| 17.5° | 4764.7 | 4767.1 | 4776.6 | 4831.6 | 4833.9 |
| 20°   | 4657.2 | 4666.8 | 4685.9 | 4748.0 | 4752.7 |
| 22.5° | 4535.4 | 4554.5 | 4580.8 | 4650.0 | 4657.2 |
| 25°   | 4413.6 | 4423.2 | 4463.8 | 4545.0 | 4561.7 |
| 27.5° | 4265.5 | 4289.4 | 4342.0 | 4425.5 | 4442.3 |
| 30°   | 4115.1 | 4148.5 | 4215.4 | 4301.4 | 4327.6 |
| 32.5° | 3967.0 | 3995.6 | 4074.5 | 4172.4 | 4203.4 |
| 35°   | 3804.6 | 3838.0 | 3935.9 | 4043.4 | 4076.8 |
| 37.5° | 3625.5 | 3678.0 | 3780.7 | 3904.9 | 3940.7 |
| 40°   | 3460.7 | 3508.4 | 3620.7 | 3759.2 | 3797.4 |
| 42.5° | 3272.0 | 3331.7 | 3467.8 | 3608.7 | 3656.5 |
| 45°   | 3085.7 | 3162.1 | 3307.8 | 3455.9 | 3515.6 |
| 47.5° | 2911.4 | 2973.4 | 3145.4 | 3312.6 | 3365.1 |
| 50°   | 2720.3 | 2791.9 | 2973.4 | 3150.2 | 3205.1 |
| 52.5° | 2531.6 | 2617.6 | 2801.5 | 2987.8 | 3047.5 |
| 55°   | 2338.2 | 2438.5 | 2634.3 | 2827.8 | 2892.2 |
| 57.5° | 2151.9 | 2252.2 | 2455.2 | 2660.6 | 2727.5 |
| 60°   | 1953.6 | 2061.1 | 2285.6 | 2483.8 | 2567.4 |
| 62.5° | 1762.6 | 1870.0 | 2106.5 | 2321.4 | 2400.3 |
| 65°   | 1573.9 | 1681.4 | 1925.0 | 2144.7 | 2225.9 |
| 67.5° | 1378.1 | 1495.1 | 1755.4 | 1968.0 | 2046.8 |
| 70°   | 1198.9 | 1311.2 | 1573.9 | 1800.8 | 1884.4 |
| 72.5° | 993.5  | 1127.3 | 1394.8 | 1619.3 | 1698.1 |
| 75°   | 797.7  | 948.2  | 1215.7 | 1425.8 | 1483.1 |
| 77.5° | 616.2  | 766.6  | 1034.1 | 1191.8 | 1227.6 |
| 80°   | 446.6  | 599.5  | 821.6  | 931.4  | 960.1  |
| 82.5° | 289.0  | 446.6  | 594.7  | 668.7  | 678.3  |
| 85°   | 160.0  | 277.0  | 353.5  | 375.0  | 358.2  |
| 87.5° | 57.3   | 105.1  | 102.7  | 83.6   | 66.9   |
| 90°   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |

(END OF REPORT)