

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: P474196

Luminaire Tested: **24CZ2-110VHE-RDP-UNV-L830-CD1-U**

Issue Date: 01/28/2021

**Test Information**

Test Method: LM-79-08  
Report Number: P474196  
Test Lab: INNOVATION CENTER(G3)  
Issue Date: 01/28/2021  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: METALUX  
Catalog Number: 24CZ2-110VHE-RDP-UNV-L830-CD1-U  
Description: 2'X4' TROFFER LED MODULE, VERY HIGH EFFICIENCY,SMOOTH LENS W/ RDP  
INSERT  
Light Source: 3000K CCT, 80 CRI LEDS  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 7137.3 lumens  
Efficiency: N/A  
Efficacy: 92.7 lumens/watt  
Spacing Criteria (0/90/45): 1.26 / 1.3 / 1.41  
Luminous Opening: Rectangular (W 2' x L: 4' x H: 0')  
CIE Type: Direct

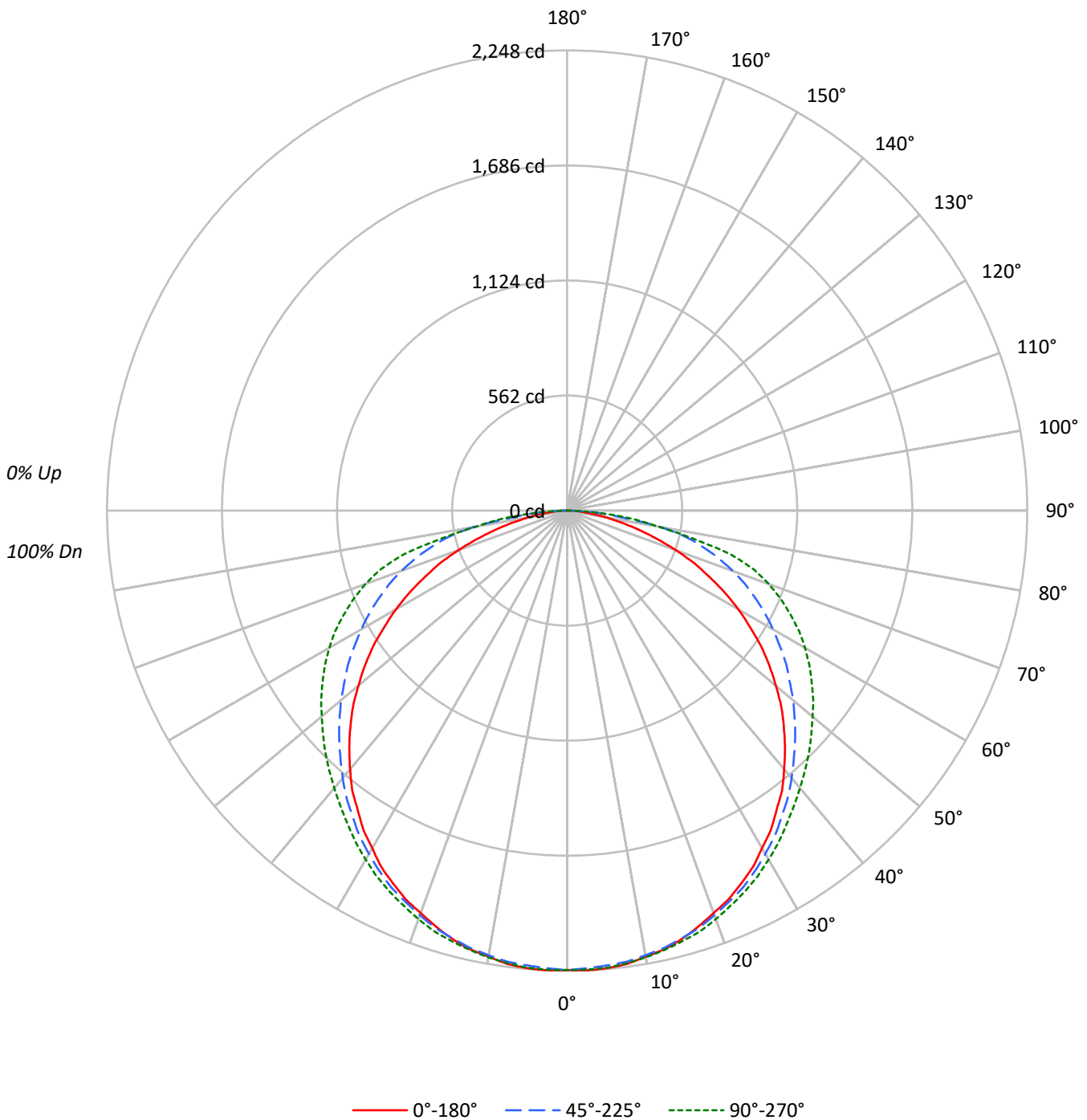
Input Watts (W): 77  
Input Voltage (V): 120  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 25 FT



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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 | 98  | 94  | 105 | 100 | 96  | 92  | 96  | 93  | 89  | 92  | 89  | 87  | 88  | 86  | 84  | 82  |
| 2   | 97  | 89  | 81  | 75  | 95  | 87  | 80  | 74  | 83  | 77  | 72  | 80  | 75  | 71  | 77  | 73  | 69  | 67  |
| 3   | 88  | 77  | 68  | 62  | 86  | 76  | 67  | 61  | 72  | 66  | 60  | 70  | 64  | 59  | 67  | 62  | 58  | 56  |
| 4   | 81  | 68  | 59  | 52  | 78  | 67  | 58  | 51  | 64  | 57  | 51  | 62  | 55  | 50  | 59  | 54  | 49  | 47  |
| 5   | 74  | 60  | 51  | 44  | 72  | 59  | 51  | 44  | 57  | 49  | 43  | 55  | 48  | 43  | 53  | 47  | 42  | 40  |
| 6   | 68  | 54  | 45  | 38  | 66  | 53  | 45  | 38  | 51  | 44  | 38  | 50  | 43  | 37  | 48  | 42  | 37  | 35  |
| 7   | 63  | 49  | 40  | 34  | 61  | 48  | 40  | 34  | 47  | 39  | 33  | 45  | 38  | 33  | 44  | 38  | 33  | 31  |
| 8   | 59  | 45  | 36  | 30  | 57  | 44  | 36  | 30  | 43  | 35  | 30  | 41  | 34  | 29  | 40  | 34  | 29  | 27  |
| 9   | 55  | 41  | 33  | 27  | 53  | 40  | 32  | 27  | 39  | 32  | 27  | 38  | 31  | 26  | 37  | 31  | 26  | 24  |
| 10  | 51  | 38  | 30  | 24  | 50  | 37  | 29  | 24  | 36  | 29  | 24  | 35  | 29  | 24  | 34  | 28  | 24  | 22  |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 3020 | 3020 | 3020 |
| 5°  | 3032 | 3012 | 3027 |
| 10° | 3023 | 3013 | 3028 |
| 15° | 3018 | 3013 | 3033 |
| 20° | 2996 | 3011 | 3042 |
| 25° | 2985 | 3017 | 3048 |
| 30° | 2959 | 3008 | 3058 |
| 35° | 2930 | 3000 | 3070 |
| 40° | 2898 | 2997 | 3109 |
| 45° | 2850 | 2998 | 3179 |
| 50° | 2786 | 3016 | 3276 |
| 55° | 2715 | 3064 | 3422 |
| 60° | 2601 | 3124 | 3610 |
| 65° | 2435 | 3234 | 3832 |
| 70° | 2214 | 3385 | 4122 |
| 75° | 1876 | 3570 | 4307 |
| 80° | 1482 | 3593 | 3483 |
| 85° | 1093 | 2734 | 3063 |



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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 212.9  | 3.0       |
| 10°-20°   | 612.8  | 8.6       |
| 20°-30°   | 937.0  | 13.1      |
| 30°-40°   | 1145.5 | 16.0      |
| 40°-50°   | 1220.9 | 17.1      |
| 50°-60°   | 1167.3 | 16.4      |
| 60°-70°   | 988.8  | 13.9      |
| 70°-80°   | 664.6  | 9.3       |
| 80°-90°   | 187.5  | 2.6       |
| 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°    | 1762.7 | 24.7      |
| 0°-40°    | 2908.2 | 40.7      |
| 0°-60°    | 5296.4 | 74.2      |
| 0°-90°    | 7137.3 | 100.0     |
| 90°-120°  | 0.0    | 0.0       |
| 90°-150°  | 0.0    | 0.0       |
| 90°-180°  | 0.0    | 0.0       |
| 0°-180°   | 7137.3 | 100.0     |

**CANDELA DISTRIBUTION:**

|     | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|-----|------|-------|------|-------|------|------|
| 0°  | 2245 | 2245  | 2245 | 2245  | 2245 |      |
| 5°  | 2245 | 2241  | 2230 | 2241  | 2241 | 213  |
| 15° | 2167 | 2167  | 2163 | 2181  | 2177 | 611  |
| 25° | 2011 | 2018  | 2032 | 2050  | 2053 | 927  |
| 35° | 1784 | 1798  | 1827 | 1862  | 1869 | 1118 |
| 45° | 1498 | 1522  | 1576 | 1643  | 1671 | 1155 |
| 55° | 1158 | 1200  | 1306 | 1409  | 1459 | 1031 |
| 65° | 765  | 843   | 1016 | 1150  | 1204 | 759  |
| 75° | 361  | 492   | 687  | 804   | 828  | 387  |
| 85° | 71   | 145   | 177  | 191   | 198  | 88   |
| 90° | 0    | 0     | 0    | 0     | 0    |      |



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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|-------|--------|--------|--------|--------|--------|
| 0°    | 2244.6 | 2244.6 | 2244.6 | 2244.6 | 2244.6 |
| 2.5°  | 2248.2 | 2248.2 | 2237.5 | 2244.6 | 2244.6 |
| 5°    | 2244.6 | 2241.1 | 2230.4 | 2241.1 | 2241.1 |
| 7.5°  | 2234.0 | 2230.4 | 2223.4 | 2234.0 | 2230.4 |
| 10°   | 2212.7 | 2212.7 | 2205.6 | 2216.3 | 2216.3 |
| 12.5° | 2195.0 | 2191.5 | 2187.9 | 2202.1 | 2198.6 |
| 15°   | 2166.7 | 2166.7 | 2163.1 | 2180.9 | 2177.3 |
| 17.5° | 2131.3 | 2134.8 | 2138.3 | 2152.5 | 2156.1 |
| 20°   | 2092.3 | 2099.4 | 2102.9 | 2124.2 | 2124.2 |
| 22.5° | 2056.9 | 2060.4 | 2067.5 | 2088.8 | 2088.8 |
| 25°   | 2010.8 | 2017.9 | 2032.1 | 2049.8 | 2053.3 |
| 27.5° | 1964.8 | 1968.3 | 1986.0 | 2010.8 | 2014.4 |
| 30°   | 1904.6 | 1915.2 | 1936.4 | 1964.8 | 1968.3 |
| 32.5° | 1851.4 | 1862.1 | 1886.9 | 1915.2 | 1922.3 |
| 35°   | 1784.1 | 1798.3 | 1826.6 | 1862.1 | 1869.1 |
| 37.5° | 1723.9 | 1734.6 | 1770.0 | 1808.9 | 1819.6 |
| 40°   | 1649.9 | 1670.8 | 1706.2 | 1752.3 | 1770.0 |
| 42.5° | 1575.5 | 1596.8 | 1639.3 | 1699.1 | 1720.4 |
| 45°   | 1497.6 | 1522.4 | 1575.5 | 1642.8 | 1670.8 |
| 47.5° | 1419.7 | 1448.0 | 1508.2 | 1586.1 | 1618.0 |
| 50°   | 1331.1 | 1366.5 | 1440.9 | 1529.5 | 1564.9 |
| 52.5° | 1246.1 | 1288.6 | 1370.1 | 1469.2 | 1515.3 |
| 55°   | 1157.5 | 1200.1 | 1306.3 | 1409.0 | 1458.6 |
| 57.5° | 1058.4 | 1115.0 | 1231.9 | 1348.8 | 1402.0 |
| 60°   | 966.6  | 1019.4 | 1161.1 | 1288.6 | 1341.7 |
| 62.5° | 867.5  | 938.3  | 1090.2 | 1224.8 | 1278.0 |
| 65°   | 764.7  | 842.7  | 1015.9 | 1150.5 | 1203.6 |
| 67.5° | 672.6  | 757.6  | 941.8  | 1076.1 | 1129.2 |
| 70°   | 562.8  | 669.1  | 860.4  | 994.6  | 1047.7 |
| 72.5° | 460.1  | 577.0  | 775.4  | 906.4  | 956.0  |
| 75°   | 360.9  | 492.0  | 686.8  | 803.7  | 828.5  |
| 77.5° | 269.2  | 407.0  | 594.7  | 644.3  | 626.6  |
| 80°   | 191.3  | 325.9  | 463.7  | 438.9  | 449.5  |
| 82.5° | 124.0  | 247.9  | 286.9  | 325.9  | 336.1  |
| 85°   | 70.8   | 145.2  | 177.1  | 191.3  | 198.4  |
| 87.5° | 31.9   | 53.1   | 70.8   | 70.8   | 67.3   |
| 90°   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |

(END OF REPORT)