

Scaled data based on original data using

LM-41-14 Approved Method for Photometric Testing Of Indoor Fluorescent Luminaires

Test Report Prepared for

Cooper Lighting Solutions

(formerly Eaton)

Brand: METALUX

Report Number: 175P217

Luminaire Tested: **HBL-654T5-W-UNV-EBT2-UPL-U**

Issue Date: 3/3/2020



Test Information

Test Method: LM-41-14
Report Number: 175P217
Test Lab: METALUX RESEARCH LABS
Issue Date: 3/3/2020
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: METALUX
Catalog Number: HBL-654T5-W-UNV-EBT2-UPL-U
Description: OPEN HIGH BAY LUMINAIRE WITH WHITE REFLECTOR, WIDE
DISTRIBUTION WITH UPLIGHT
Light Source: SIX 54 WATT T5HO - 4400 LUMENS EA
Ballast/Driver: -

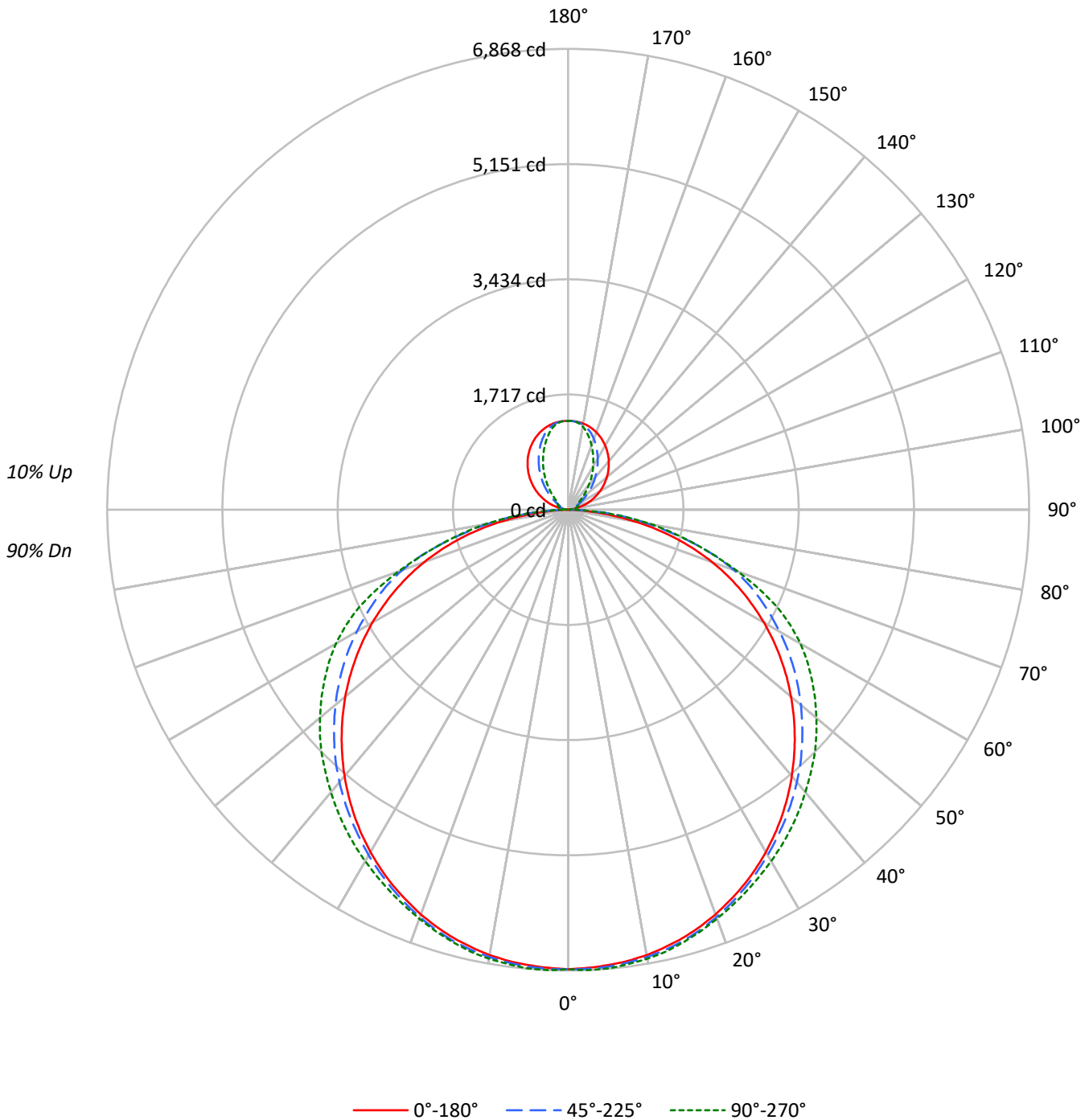
Summary

Lumens per Lamp: 4400 (6 lamps)
Luminaire Lumens: 24623.1 lumens
Efficiency: 93.3%
Efficacy: 71.2 lumens/watt
Spacing Criteria (0/90/45): 1.28 / 1.32 / 1.43
Luminous Opening: Rectangular (W 1.58' x L: 4' x H: 0')
CIE Type: Semi-Direct

Input Watts (W): 346
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: 25 FT

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Luminous Intensity Polar Plot





TEST NUMBER: 175P217

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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 | 109 | 109 | 109 | 109 | 105 | 105 | 105 | 105 | 98 | 98 | 98 | 92 | 92 | 92 | 86 | 86 | 86 | 84 |
| 1 | 99 | 94 | 90 | 86 | 95 | 91 | 87 | 83 | 85 | 82 | 79 | 80 | 77 | 75 | 75 | 73 | 71 | 68 |
| 2 | 89 | 81 | 74 | 69 | 86 | 78 | 72 | 67 | 74 | 69 | 64 | 69 | 65 | 61 | 65 | 62 | 59 | 56 |
| 3 | 81 | 71 | 63 | 57 | 78 | 68 | 61 | 55 | 64 | 58 | 53 | 60 | 55 | 51 | 57 | 53 | 49 | 46 |
| 4 | 74 | 62 | 54 | 47 | 71 | 60 | 53 | 47 | 57 | 50 | 45 | 53 | 48 | 43 | 50 | 46 | 42 | 39 |
| 5 | 68 | 55 | 47 | 40 | 65 | 54 | 46 | 40 | 51 | 44 | 38 | 48 | 42 | 37 | 45 | 40 | 36 | 34 |
| 6 | 62 | 50 | 41 | 35 | 60 | 48 | 40 | 34 | 46 | 39 | 33 | 43 | 37 | 32 | 41 | 35 | 31 | 29 |
| 7 | 58 | 45 | 37 | 31 | 55 | 44 | 36 | 30 | 41 | 34 | 29 | 39 | 33 | 29 | 37 | 32 | 28 | 26 |
| 8 | 54 | 41 | 33 | 27 | 51 | 40 | 32 | 27 | 38 | 31 | 26 | 36 | 30 | 25 | 34 | 29 | 25 | 23 |
| 9 | 50 | 37 | 30 | 24 | 48 | 36 | 29 | 24 | 35 | 28 | 23 | 33 | 27 | 23 | 31 | 26 | 22 | 20 |
| 10 | 47 | 34 | 27 | 22 | 45 | 33 | 26 | 22 | 32 | 26 | 21 | 30 | 25 | 21 | 29 | 24 | 20 | 18 |

AVERAGE LUMINANCE (cd/sqm):

| | 0° | 45° | 90° |
|-----|-------|-------|-------|
| 0° | 11642 | 11642 | 11642 |
| 5° | 11625 | 11663 | 11709 |
| 10° | 11630 | 11684 | 11728 |
| 15° | 11625 | 11697 | 11732 |
| 20° | 11608 | 11686 | 11733 |
| 25° | 11587 | 11668 | 11773 |
| 30° | 11561 | 11667 | 11871 |
| 35° | 11532 | 11696 | 12017 |
| 40° | 11499 | 11761 | 12198 |
| 45° | 11472 | 11847 | 12467 |
| 50° | 11462 | 11967 | 12763 |
| 55° | 11455 | 12149 | 13138 |
| 60° | 11455 | 12366 | 13586 |
| 65° | 11433 | 12704 | 13822 |
| 70° | 11345 | 13069 | 13342 |
| 75° | 10979 | 12687 | 12746 |
| 80° | 9905 | 11901 | 12401 |
| 85° | 6786 | 10686 | 10686 |



TEST NUMBER: 175P217

CATALOG NUMBER: HBL-654T5-W-UNV-EBT2-UPL-U

ZONAL LUMENS:

CANDELA DISTRIBUTION:

| Zone | Lumens | % Fixture | % Lamp | | 0° | 22.5° | 45° | 67.5° | 90° | Flux |
|-----------|---------|-----------|--------|------|------|-------|------|-------|------|------|
| 0°-10° | 650.1 | 2.6 | 2.5 | 0° | 6850 | 6850 | 6850 | 6850 | 6850 | |
| 10°-20° | 1874.6 | 7.6 | 7.1 | 5° | 6814 | 6821 | 6836 | 6839 | 6863 | 648 |
| 20°-30° | 2872.0 | 11.7 | 10.9 | 15° | 6607 | 6623 | 6648 | 6653 | 6668 | 1865 |
| 30°-40° | 3542.5 | 14.4 | 13.4 | 25° | 6179 | 6205 | 6222 | 6252 | 6278 | 2848 |
| 40°-50° | 3821.1 | 15.5 | 14.5 | 35° | 5558 | 5577 | 5637 | 5745 | 5792 | 3478 |
| 50°-60° | 3678.4 | 14.9 | 13.9 | 45° | 4773 | 4783 | 4929 | 5111 | 5187 | 3684 |
| 60°-70° | 3080.6 | 12.5 | 11.7 | 55° | 3866 | 3864 | 4100 | 4345 | 4434 | 3455 |
| 70°-80° | 1953.7 | 7.9 | 7.4 | 65° | 2843 | 2818 | 3159 | 3399 | 3437 | 2808 |
| 80°-90° | 591.5 | 2.4 | 2.2 | 75° | 1672 | 1718 | 1932 | 1933 | 1941 | 1753 |
| 90°-100° | 59.1 | 0.2 | 0.2 | 85° | 348 | 495 | 548 | 554 | 548 | 427 |
| 100°-110° | 131.5 | 0.5 | 0.5 | 90° | 4 | 19 | 37 | 47 | 50 | 20 |
| 110°-120° | 210.9 | 0.9 | 0.8 | 95° | 43 | 53 | 54 | 43 | 25 | 55 |
| 120°-130° | 310.3 | 1.3 | 1.2 | 105° | 218 | 84 | 113 | 129 | 130 | 234 |
| 130°-140° | 423.4 | 1.7 | 1.6 | 115° | 433 | 233 | 144 | 164 | 170 | 430 |
| 140°-150° | 490.7 | 2.0 | 1.9 | 125° | 649 | 454 | 280 | 214 | 204 | 580 |
| 150°-160° | 467.3 | 1.9 | 1.8 | 135° | 847 | 696 | 500 | 391 | 360 | 655 |
| 160°-170° | 340.6 | 1.4 | 1.3 | 145° | 1026 | 931 | 753 | 643 | 608 | 642 |
| 170°-180° | 124.6 | 0.5 | 0.5 | 155° | 1171 | 1130 | 1005 | 910 | 880 | 539 |
| 0°-30° | 5396.8 | 21.9 | 20.4 | 165° | 1272 | 1262 | 1217 | 1166 | 1149 | 359 |
| 0°-40° | 8939.3 | 36.3 | 33.9 | 175° | 1319 | 1319 | 1317 | 1314 | 1316 | 125 |
| 0°-60° | 16438.8 | 66.8 | 62.3 | 180° | 1324 | 1324 | 1324 | 1324 | 1324 | |
| 0°-90° | 22064.5 | 89.6 | 83.6 | | | | | | | |
| 90°-120° | 401.5 | 1.6 | 1.5 | | | | | | | |
| 90°-150° | 1625.9 | 6.6 | 6.2 | | | | | | | |
| 90°-180° | 2559.0 | 10.4 | 9.7 | | | | | | | |
| 0°-180° | 24623.1 | 100.0 | 93.3 | | | | | | | |



TEST NUMBER: 175P217

CATALOG NUMBER: HBL-654T5-W-UNV-EBT2-UPL-U

CANDELA DISTRIBUTION (FULL):

| | 0° | 22.5° | 45° | 67.5° | 90° |
|--------|------|-------|------|-------|------|
| 0° | 6850 | 6850 | 6850 | 6850 | 6850 |
| 2.5° | 6834 | 6839 | 6849 | 6853 | 6868 |
| 5° | 6814 | 6821 | 6836 | 6839 | 6863 |
| 7.5° | 6785 | 6793 | 6809 | 6815 | 6831 |
| 10° | 6739 | 6748 | 6770 | 6776 | 6796 |
| 12.5° | 6678 | 6693 | 6716 | 6726 | 6743 |
| 15° | 6607 | 6623 | 6648 | 6653 | 6668 |
| 17.5° | 6518 | 6538 | 6562 | 6565 | 6583 |
| 20° | 6418 | 6442 | 6461 | 6469 | 6487 |
| 22.5° | 6302 | 6326 | 6347 | 6363 | 6384 |
| 25° | 6179 | 6205 | 6222 | 6252 | 6278 |
| 27.5° | 6041 | 6066 | 6088 | 6134 | 6166 |
| 30° | 5891 | 5917 | 5945 | 6009 | 6049 |
| 32.5° | 5731 | 5753 | 5793 | 5880 | 5924 |
| 35° | 5558 | 5577 | 5637 | 5745 | 5792 |
| 37.5° | 5376 | 5393 | 5473 | 5597 | 5649 |
| 40° | 5183 | 5198 | 5301 | 5442 | 5498 |
| 42.5° | 4982 | 4992 | 5122 | 5274 | 5343 |
| 45° | 4773 | 4783 | 4929 | 5111 | 5187 |
| 47.5° | 4559 | 4563 | 4731 | 4938 | 5014 |
| 50° | 4335 | 4339 | 4526 | 4752 | 4827 |
| 52.5° | 4104 | 4105 | 4316 | 4553 | 4636 |
| 55° | 3866 | 3864 | 4100 | 4345 | 4434 |
| 57.5° | 3620 | 3611 | 3874 | 4135 | 4225 |
| 60° | 3370 | 3356 | 3638 | 3911 | 3997 |
| 62.5° | 3108 | 3087 | 3399 | 3669 | 3732 |
| 65° | 2843 | 2818 | 3159 | 3399 | 3437 |
| 67.5° | 2566 | 2547 | 2908 | 3075 | 3068 |
| 70° | 2283 | 2268 | 2630 | 2693 | 2685 |
| 72.5° | 1982 | 1987 | 2309 | 2308 | 2301 |
| 75° | 1672 | 1718 | 1932 | 1933 | 1941 |
| 77.5° | 1345 | 1455 | 1558 | 1582 | 1598 |
| 80° | 1012 | 1161 | 1216 | 1257 | 1267 |
| 82.5° | 672 | 811 | 898 | 904 | 892 |
| 85° | 348 | 495 | 548 | 554 | 548 |
| 87.5° | 93 | 206 | 220 | 223 | 220 |
| 90° | 4 | 19 | 37 | 47 | 50 |
| 92.5° | 43 | 56 | 56 | 36 | 19 |
| 95° | 43 | 53 | 54 | 43 | 25 |
| 97.5° | 77 | 61 | 75 | 67 | 49 |
| 100° | 124 | 67 | 86 | 89 | 86 |
| 102.5° | 171 | 73 | 103 | 101 | 98 |
| 105° | 218 | 84 | 113 | 129 | 130 |
| 107.5° | 272 | 110 | 121 | 139 | 143 |
| 110° | 326 | 145 | 128 | 149 | 156 |



TEST NUMBER: 175P217

CATALOG NUMBER: HBL-654T5-W-UNV-EBT2-UPL-U

CANDELA DISTRIBUTION (continued):

| | 0° | 22.5° | 45° | 67.5° | 90° |
|--------|------|-------|------|-------|------|
| 112.5° | 381 | 186 | 134 | 158 | 165 |
| 115° | 433 | 233 | 144 | 164 | 170 |
| 117.5° | 489 | 284 | 164 | 168 | 176 |
| 120° | 543 | 340 | 195 | 175 | 180 |
| 122.5° | 596 | 397 | 235 | 189 | 188 |
| 125° | 649 | 454 | 280 | 214 | 204 |
| 127.5° | 700 | 515 | 330 | 249 | 230 |
| 130° | 751 | 576 | 383 | 290 | 266 |
| 132.5° | 802 | 637 | 441 | 340 | 311 |
| 135° | 847 | 696 | 500 | 391 | 360 |
| 137.5° | 896 | 756 | 563 | 448 | 415 |
| 140° | 941 | 816 | 626 | 510 | 475 |
| 142.5° | 986 | 875 | 690 | 578 | 541 |
| 145° | 1026 | 931 | 753 | 643 | 608 |
| 147.5° | 1066 | 985 | 817 | 710 | 675 |
| 150° | 1104 | 1038 | 881 | 778 | 744 |
| 152.5° | 1138 | 1085 | 942 | 843 | 811 |
| 155° | 1171 | 1130 | 1005 | 910 | 880 |
| 157.5° | 1201 | 1170 | 1064 | 976 | 950 |
| 160° | 1228 | 1206 | 1121 | 1043 | 1018 |
| 162.5° | 1252 | 1236 | 1173 | 1106 | 1086 |
| 165° | 1272 | 1262 | 1217 | 1166 | 1149 |
| 167.5° | 1290 | 1284 | 1255 | 1219 | 1208 |
| 170° | 1303 | 1300 | 1284 | 1263 | 1257 |
| 172.5° | 1313 | 1313 | 1306 | 1296 | 1293 |
| 175° | 1319 | 1319 | 1317 | 1314 | 1316 |
| 177.5° | 1323 | 1323 | 1324 | 1323 | 1325 |
| 180° | 1324 | 1324 | 1324 | 1324 | 1324 |

(END OF REPORT)