

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: ITL63250

Luminaire Tested: **HBI-454T5-N-UNV-EHT1-UPL-U**

Issue Date: 3/3/2020



Test Information

Test Method: LM-41-14
Report Number: ITL63250
Test Lab: INDEPENDENT TESTING LABORATORIES, INC.
Issue Date: 3/3/2020
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: METALUX
Catalog Number: HBI-454T5-N-UNV-EHT1-UPL-U
Description: [HBI SERIES, FULL BODY STEEL HOUSING, WITH FOUR T5HO LAMPS
NARROW DISTRIBUTION SPECULAR REFLECTOR WITH UPLIGHT
Light Source: FOUR T5 HIGH OUTPUT LINEAR FLUORESCENT LAMPS, F54T5 54W - 4400 LUMENS EA
Ballast/Driver: -

Summary

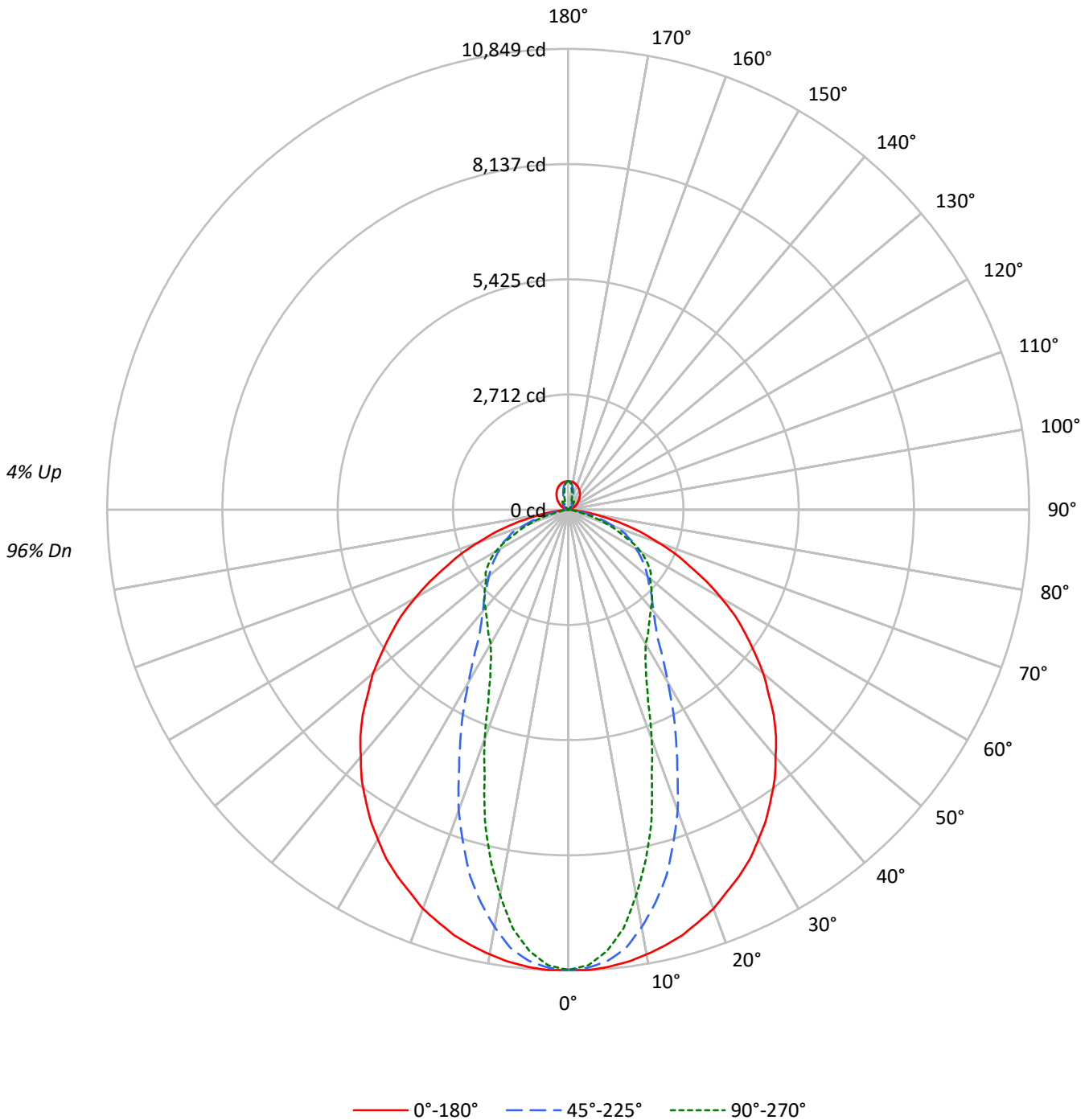
Lumens per Lamp: 4400 (4 lamps)
Luminaire Lumens: 17881.2 lumens
Efficiency: 101.6%
Efficacy: 74.4 lumens/watt
Spacing Criteria (0/90/45): 1.23 / 0.66 / 0.86
Luminous Opening: Rectangular (W 1.3' x L: 3.99' x H: 0')
CIE Type: Direct

Input Watts (W): 240.2
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





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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 | 50 | 30 | 10 | 50 | 30 | 10 | 0 | | |
| RCR | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | 120 | 120 | 120 | 120 | 117 | 117 | 117 | 117 | 111 | 111 | 111 | 105 | 105 | 105 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 97 | | |
| 1 | 111 | 107 | 103 | 100 | 108 | 104 | 101 | 98 | 99 | 96 | 94 | 94 | 92 | 90 | 90 | 88 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 85 | | |
| 2 | 102 | 95 | 89 | 83 | 99 | 92 | 87 | 82 | 88 | 84 | 80 | 84 | 81 | 77 | 81 | 78 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 73 | | |
| 3 | 94 | 84 | 77 | 71 | 91 | 83 | 76 | 70 | 79 | 73 | 68 | 76 | 71 | 67 | 73 | 69 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 63 | | |
| 4 | 87 | 76 | 68 | 62 | 84 | 74 | 67 | 61 | 71 | 65 | 60 | 68 | 63 | 58 | 66 | 61 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 55 | | |
| 5 | 80 | 69 | 60 | 54 | 78 | 67 | 59 | 54 | 65 | 58 | 53 | 62 | 56 | 52 | 60 | 55 | 51 | 51 | 51 | 51 | 51 | 51 | 51 | 49 | | |
| 6 | 75 | 62 | 54 | 48 | 73 | 61 | 54 | 48 | 59 | 52 | 47 | 57 | 51 | 46 | 55 | 50 | 46 | 46 | 46 | 46 | 46 | 46 | 46 | 44 | | |
| 7 | 70 | 57 | 49 | 43 | 68 | 56 | 49 | 43 | 54 | 47 | 42 | 53 | 46 | 42 | 51 | 46 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 39 | | |
| 8 | 65 | 53 | 45 | 39 | 64 | 52 | 44 | 39 | 50 | 43 | 39 | 49 | 43 | 38 | 47 | 42 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 36 | | |
| 9 | 62 | 49 | 41 | 36 | 60 | 48 | 41 | 36 | 47 | 40 | 35 | 45 | 39 | 35 | 44 | 39 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 33 | | |
| 10 | 58 | 45 | 38 | 33 | 57 | 45 | 38 | 33 | 44 | 37 | 33 | 42 | 36 | 32 | 41 | 36 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 30 | | |

AVERAGE LUMINANCE (cd/sqm):

| | 0° | 45° | 90° |
|-----|-------|-------|-------|
| 0° | 22447 | 22447 | 22447 |
| 5° | 22474 | 22177 | 21696 |
| 10° | 22368 | 20986 | 19384 |
| 15° | 22245 | 19148 | 16237 |
| 20° | 22042 | 16613 | 12681 |
| 25° | 21761 | 13734 | 9906 |
| 30° | 21440 | 11200 | 8721 |
| 35° | 21038 | 9233 | 8363 |
| 40° | 20544 | 8437 | 8190 |
| 45° | 20038 | 8082 | 8158 |
| 50° | 19322 | 7853 | 8104 |
| 55° | 18384 | 7778 | 8359 |
| 60° | 17235 | 7679 | 8185 |
| 65° | 15483 | 7698 | 6952 |
| 70° | 13601 | 6985 | 5852 |
| 75° | 11280 | 5572 | 4043 |
| 80° | 7685 | 2912 | 1038 |
| 85° | 2473 | 1022 | 1450 |



TEST NUMBER: ITL63250

CATALOG NUMBER: HBI-454T5-N-UNV-EHT1-UPL-U

ZONAL LUMENS:

CANDELA DISTRIBUTION:

| Zone | Lumens | % Fixture | % Lamp | | 0° | 22.5° | 45° | 67.5° | 90° | Flux |
|-----------|---------|-----------|--------|------|-------|-------|-------|-------|-------|------|
| 0°-10° | 994.7 | 5.6 | 5.7 | 0° | 10833 | 10833 | 10833 | 10833 | 10833 | |
| 10°-20° | 2491.9 | 13.9 | 14.2 | 5° | 10805 | 10779 | 10662 | 10553 | 10431 | ### |
| 20°-30° | 3003.9 | 16.8 | 17.1 | 15° | 10370 | 9996 | 8926 | 7921 | 7569 | 2923 |
| 30°-40° | 2993.3 | 16.7 | 17.0 | 25° | 9518 | 8404 | 6007 | 4698 | 4333 | 4384 |
| 40°-50° | 2750.7 | 15.4 | 15.6 | 35° | 8317 | 6255 | 3650 | 3358 | 3306 | 5205 |
| 50°-60° | 2319.4 | 13.0 | 13.2 | 45° | 6838 | 3898 | 2758 | 2793 | 2784 | 5260 |
| 60°-70° | 1687.6 | 9.4 | 9.6 | 55° | 5089 | 2205 | 2153 | 2297 | 2314 | 4551 |
| 70°-80° | 789.2 | 4.4 | 4.5 | 65° | 3158 | 1379 | 1570 | 1536 | 1418 | 3159 |
| 80°-90° | 99.2 | 0.6 | 0.6 | 75° | 1409 | 805 | 696 | 565 | 505 | 1494 |
| 90°-100° | 7.6 | 0.0 | 0.0 | 85° | 104 | 61 | 43 | 61 | 61 | 210 |
| 100°-110° | 19.3 | 0.1 | 0.1 | 90° | 0 | 2 | 2 | 2 | 0 | 3 |
| 110°-120° | 46.3 | 0.3 | 0.3 | 95° | 10 | 7 | 7 | 7 | 5 | 15 |
| 120°-130° | 70.5 | 0.4 | 0.4 | 105° | 76 | 14 | 8 | 7 | 5 | 82 |
| 130°-140° | 121.2 | 0.7 | 0.7 | 115° | 165 | 71 | 18 | 15 | 12 | 163 |
| 140°-150° | 152.7 | 0.9 | 0.9 | 125° | 257 | 94 | 47 | 24 | 21 | 232 |
| 150°-160° | 141.8 | 0.8 | 0.8 | 135° | 371 | 120 | 173 | 110 | 71 | 286 |
| 160°-170° | 132.2 | 0.7 | 0.8 | 145° | 478 | 254 | 152 | 220 | 235 | 299 |
| 170°-180° | 59.5 | 0.3 | 0.3 | 155° | 569 | 413 | 242 | 177 | 174 | 262 |
| 0°-30° | 6490.6 | 36.3 | 36.9 | 165° | 637 | 571 | 453 | 383 | 354 | 179 |
| 0°-40° | 9483.9 | 53.0 | 53.9 | 175° | 670 | 662 | 654 | 642 | 634 | 64 |
| 0°-60° | 14554.0 | 81.4 | 82.7 | 180° | 668 | 668 | 668 | 668 | 668 | |
| 0°-90° | 17130.0 | 95.8 | 97.3 | | | | | | | |
| 90°-120° | 73.2 | 0.4 | 0.4 | | | | | | | |
| 90°-150° | 417.6 | 2.3 | 2.4 | | | | | | | |
| 90°-180° | 751.0 | 4.2 | 4.3 | | | | | | | |
| 0°-180° | 17881.2 | 100.0 | 101.6 | | | | | | | |



TEST NUMBER: ITL63250

CATALOG NUMBER: HBI-454T5-N-UNV-EHT1-UPL-U

CANDELA DISTRIBUTION (FULL):

| | 0° | 22.5° | 45° | 67.5° | 90° |
|--------|-------|-------|-------|-------|-------|
| 0° | 10833 | 10833 | 10833 | 10833 | 10833 |
| 2.5° | 10849 | 10836 | 10792 | 10749 | 10736 |
| 5° | 10805 | 10779 | 10662 | 10553 | 10431 |
| 7.5° | 10736 | 10662 | 10405 | 10061 | 9944 |
| 10° | 10631 | 10509 | 9974 | 9492 | 9213 |
| 12.5° | 10509 | 10275 | 9483 | 8752 | 8439 |
| 15° | 10370 | 9996 | 8926 | 7921 | 7569 |
| 17.5° | 10179 | 9679 | 8221 | 7077 | 6542 |
| 20° | 9996 | 9274 | 7534 | 6181 | 5751 |
| 22.5° | 9744 | 8861 | 6712 | 5420 | 4915 |
| 25° | 9518 | 8404 | 6007 | 4698 | 4333 |
| 27.5° | 9265 | 7934 | 5342 | 4154 | 3932 |
| 30° | 8961 | 7343 | 4681 | 3754 | 3645 |
| 32.5° | 8665 | 6803 | 4137 | 3545 | 3489 |
| 35° | 8317 | 6255 | 3650 | 3358 | 3306 |
| 37.5° | 7986 | 5624 | 3358 | 3193 | 3158 |
| 40° | 7595 | 5037 | 3119 | 3036 | 3028 |
| 42.5° | 7238 | 4428 | 2932 | 2893 | 2923 |
| 45° | 6838 | 3898 | 2758 | 2793 | 2784 |
| 47.5° | 6386 | 3419 | 2580 | 2653 | 2645 |
| 50° | 5994 | 2919 | 2436 | 2501 | 2514 |
| 52.5° | 5533 | 2532 | 2297 | 2379 | 2453 |
| 55° | 5089 | 2205 | 2153 | 2297 | 2314 |
| 57.5° | 4663 | 1984 | 2001 | 2153 | 2158 |
| 60° | 4159 | 1762 | 1853 | 1984 | 1975 |
| 62.5° | 3680 | 1570 | 1766 | 1805 | 1731 |
| 65° | 3158 | 1379 | 1570 | 1536 | 1418 |
| 67.5° | 2740 | 1235 | 1435 | 1266 | 1201 |
| 70° | 2245 | 1083 | 1153 | 1040 | 966 |
| 72.5° | 1836 | 927 | 913 | 796 | 722 |
| 75° | 1409 | 805 | 696 | 565 | 505 |
| 77.5° | 983 | 644 | 461 | 352 | 217 |
| 80° | 644 | 396 | 244 | 104 | 87 |
| 82.5° | 339 | 226 | 65 | 65 | 61 |
| 85° | 104 | 61 | 43 | 61 | 61 |
| 87.5° | 17 | 17 | 26 | 30 | 35 |
| 90° | 0 | 2 | 2 | 2 | 0 |
| 92.5° | 3 | 6 | 7 | 5 | 3 |
| 95° | 10 | 7 | 7 | 7 | 5 |
| 97.5° | 25 | 7 | 7 | 7 | 5 |
| 100° | 39 | 10 | 7 | 7 | 5 |
| 102.5° | 54 | 12 | 7 | 7 | 5 |
| 105° | 76 | 14 | 8 | 7 | 5 |
| 107.5° | 101 | 18 | 11 | 8 | 5 |
| 110° | 123 | 24 | 13 | 9 | 7 |



TEST NUMBER: ITL63250

CATALOG NUMBER: HBI-454T5-N-UNV-EHT1-UPL-U

CANDELA DISTRIBUTION (continued):

| | 0° | 22.5° | 45° | 67.5° | 90° |
|--------|-----|-------|-----|-------|-----|
| 112.5° | 143 | 48 | 16 | 12 | 8 |
| 115° | 165 | 71 | 18 | 15 | 12 |
| 117.5° | 185 | 89 | 19 | 17 | 16 |
| 120° | 210 | 93 | 24 | 19 | 17 |
| 122.5° | 230 | 94 | 27 | 20 | 20 |
| 125° | 257 | 94 | 47 | 24 | 21 |
| 127.5° | 288 | 89 | 85 | 29 | 25 |
| 130° | 314 | 91 | 121 | 36 | 30 |
| 132.5° | 345 | 101 | 156 | 65 | 39 |
| 135° | 371 | 120 | 173 | 110 | 71 |
| 137.5° | 398 | 151 | 176 | 163 | 124 |
| 140° | 426 | 183 | 172 | 202 | 180 |
| 142.5° | 454 | 222 | 166 | 225 | 220 |
| 145° | 478 | 254 | 152 | 220 | 235 |
| 147.5° | 502 | 289 | 150 | 207 | 226 |
| 150° | 529 | 332 | 168 | 189 | 211 |
| 152.5° | 548 | 369 | 199 | 172 | 188 |
| 155° | 569 | 413 | 242 | 177 | 174 |
| 157.5° | 591 | 454 | 296 | 212 | 189 |
| 160° | 607 | 499 | 345 | 267 | 232 |
| 162.5° | 623 | 536 | 399 | 323 | 289 |
| 165° | 637 | 571 | 453 | 383 | 354 |
| 167.5° | 649 | 605 | 507 | 447 | 422 |
| 170° | 657 | 629 | 565 | 514 | 490 |
| 172.5° | 665 | 651 | 616 | 590 | 567 |
| 175° | 670 | 662 | 654 | 642 | 634 |
| 177.5° | 671 | 666 | 665 | 662 | 661 |
| 180° | 668 | 668 | 668 | 668 | 668 |

(END OF REPORT)