

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: HALO

Report Number: 267P143

Luminaire Tested: **H278ICAT- 404C**

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-41-14  
Report Number: 267P143  
Test Lab: METALUX RESEARCH LABS  
Issue Date: 3/3/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: HALO  
Catalog Number: H278ICAT- 404C  
Description: HALO RECESSED WITH WHITE TRIM AND SPECULAR REFLECTOR IN H27 HOUSING.  
Light Source: ONE COMPACT FLUORESCENT ECO TWIST LAMP  
CF28T/827 28 WATTS  
Ballast/Driver: -

**Summary**

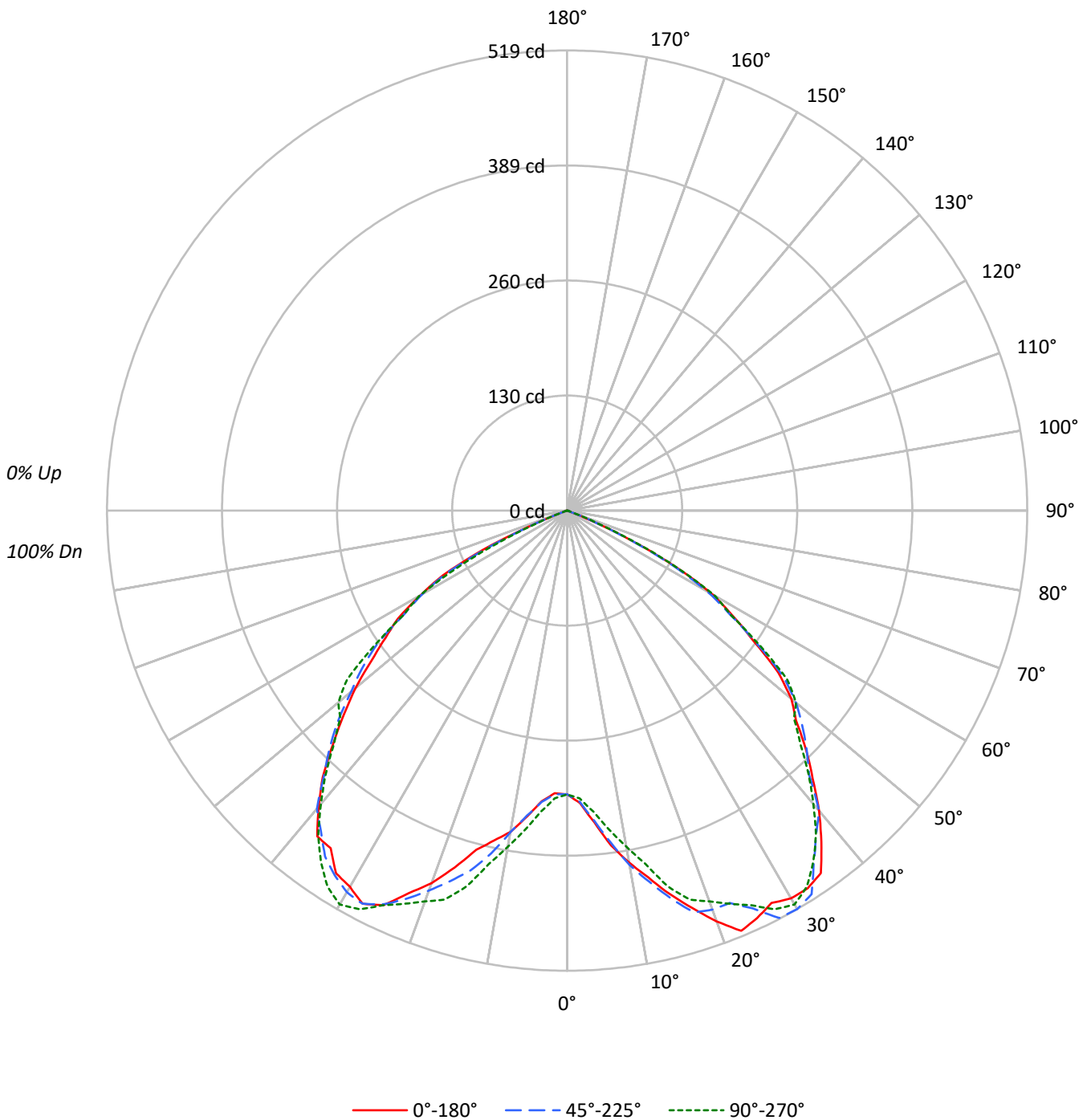
Lumens per Lamp: 1675 (1 lamp)  
Luminaire Lumens: 1301.1 lumens  
Efficiency: 77.7%  
Efficacy: 46.5 lumens/watt  
Spacing Criteria (0/90/45): 1.85 / 1.84 / 1.74  
Luminous Opening: Circular (Dia: 0.5' x H: 0')  
CIE Type: Direct

Input Watts (W): 28  
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 | 0  |
| RCR |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 0   | 92 | 92 | 92 | 92 | 90 | 90 | 90 | 90 | 86 | 86 | 86 | 83 | 83 | 83 | 79 | 79 | 79 | 78 |
| 1   | 86 | 83 | 81 | 78 | 84 | 82 | 79 | 77 | 78 | 76 | 75 | 75 | 74 | 72 | 73 | 71 | 70 | 69 |
| 2   | 79 | 74 | 70 | 66 | 78 | 73 | 69 | 65 | 70 | 67 | 64 | 67 | 65 | 62 | 65 | 63 | 61 | 59 |
| 3   | 73 | 66 | 60 | 56 | 71 | 65 | 59 | 55 | 62 | 58 | 54 | 60 | 57 | 53 | 58 | 55 | 53 | 51 |
| 4   | 67 | 59 | 52 | 48 | 65 | 58 | 52 | 47 | 56 | 51 | 47 | 54 | 50 | 46 | 52 | 49 | 46 | 44 |
| 5   | 62 | 53 | 46 | 41 | 60 | 52 | 46 | 41 | 50 | 45 | 41 | 49 | 44 | 40 | 47 | 43 | 40 | 38 |
| 6   | 57 | 47 | 41 | 36 | 56 | 47 | 40 | 36 | 45 | 40 | 36 | 44 | 39 | 35 | 43 | 38 | 35 | 33 |
| 7   | 53 | 43 | 36 | 32 | 51 | 42 | 36 | 32 | 41 | 35 | 31 | 40 | 35 | 31 | 39 | 34 | 31 | 29 |
| 8   | 49 | 39 | 32 | 28 | 48 | 38 | 32 | 28 | 37 | 32 | 28 | 36 | 31 | 28 | 35 | 31 | 28 | 26 |
| 9   | 46 | 36 | 29 | 25 | 45 | 35 | 29 | 25 | 34 | 29 | 25 | 33 | 28 | 25 | 33 | 28 | 25 | 23 |
| 10  | 43 | 33 | 27 | 23 | 42 | 32 | 26 | 23 | 31 | 26 | 22 | 31 | 26 | 22 | 30 | 26 | 22 | 21 |

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

|     | 0°    | 90°   | 180°  |
|-----|-------|-------|-------|
| 0°  | 17542 | 17542 | 17542 |
| 5°  | 19425 | 18765 | 18105 |
| 10° | 22433 | 21431 | 20485 |
| 15° | 25426 | 24915 | 22475 |
| 20° | 28761 | 27361 | 26077 |
| 25° | 30667 | 29699 | 29699 |
| 30° | 31967 | 32473 | 31017 |
| 35° | 33395 | 32391 | 31119 |
| 40° | 31631 | 30915 | 31201 |
| 45° | 29538 | 28840 | 28995 |
| 50° | 28144 | 28741 | 26609 |
| 55° | 24563 | 25328 | 23894 |
| 60° | 20832 | 21161 | 20941 |
| 65° | 10637 | 11026 | 13620 |
| 70° | 641   | 801   | 962   |
| 75° | 424   | 424   | 424   |
| 80° | 316   | 316   | 316   |
| 85° | 629   | 0     | 629   |



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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture | % Lamp |
|-----------|--------|-----------|--------|
| 0°-10°    | 34.0   | 2.6       | 2.0    |
| 10°-20°   | 123.4  | 9.5       | 7.4    |
| 20°-30°   | 228.3  | 17.5      | 13.6   |
| 30°-40°   | 300.0  | 23.1      | 17.9   |
| 40°-50°   | 292.0  | 22.4      | 17.4   |
| 50°-60°   | 231.8  | 17.8      | 13.8   |
| 60°-70°   | 89.1   | 6.8       | 5.3    |
| 70°-80°   | 2.0    | 0.2       | 0.1    |
| 80°-90°   | 0.5    | 0.0       | 0.0    |
| 90°-100°  | 0.0    | 0.0       | 0.0    |
| 100°-110° | 0.0    | 0.0       | 0.0    |
| 110°-120° | 0.0    | 0.0       | 0.0    |
| 120°-130° | 0.0    | 0.0       | 0.0    |
| 130°-140° | 0.0    | 0.0       | 0.0    |
| 140°-150° | 0.0    | 0.0       | 0.0    |
| 150°-160° | 0.0    | 0.0       | 0.0    |
| 160°-170° | 0.0    | 0.0       | 0.0    |
| 170°-180° | 0.0    | 0.0       | 0.0    |
| 0°-30°    | 385.7  | 29.6      | 23.0   |
| 0°-40°    | 685.7  | 52.7      | 40.9   |
| 0°-60°    | 1209.5 | 93.0      | 72.2   |
| 0°-90°    | 1301.1 | 100.0     | 77.7   |
| 90°-120°  | 0.0    | 0.0       | 0.0    |
| 90°-150°  | 0.0    | 0.0       | 0.0    |
| 90°-180°  | 0.0    | 0.0       | 0.0    |
| 0°-180°   | 1301.1 | 100.0     | 77.7   |

**CANDELA DISTRIBUTION:**

|     | 0°  | 45° | 90° | 135° | 180° | Flux |
|-----|-----|-----|-----|------|------|------|
| 0°  | 320 | 320 | 320 | 320  | 320  |      |
| 5°  | 353 | 351 | 341 | 330  | 329  | 35   |
| 15° | 448 | 453 | 439 | 420  | 396  | 128  |
| 25° | 507 | 495 | 491 | 490  | 491  | 233  |
| 35° | 499 | 485 | 484 | 476  | 465  | 305  |
| 45° | 381 | 382 | 372 | 379  | 374  | 294  |
| 55° | 257 | 261 | 265 | 261  | 250  | 232  |
| 65° | 82  | 79  | 85  | 96   | 105  | 84   |
| 75° | 2   | 1   | 2   | 1    | 2    | 2    |
| 85° | 1   | 0   | 0   | 0    | 1    | 1    |
| 90° | 0   | 0   | 0   | 0    | 0    |      |



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**CANDELA DISTRIBUTION (FULL):**

|       | 0°  | 22.5° | 45° | 67.5° | 90° | 112.5° | 135° | 157.5° | 180° |
|-------|-----|-------|-----|-------|-----|--------|------|--------|------|
| 0°    | 320 | 320   | 320 | 320   | 320 | 320    | 320  | 320    | 320  |
| 2.5°  | 330 | 330   | 329 | 327   | 325 | 322    | 320  | 319    | 319  |
| 5°    | 353 | 352   | 351 | 347   | 341 | 335    | 330  | 329    | 329  |
| 7.5°  | 381 | 380   | 378 | 372   | 363 | 353    | 347  | 347    | 348  |
| 10°   | 403 | 401   | 406 | 398   | 385 | 375    | 368  | 367    | 368  |
| 12.5° | 424 | 423   | 429 | 425   | 408 | 399    | 396  | 388    | 381  |
| 15°   | 448 | 449   | 453 | 458   | 439 | 425    | 420  | 403    | 396  |
| 17.5° | 470 | 468   | 475 | 476   | 460 | 442    | 438  | 428    | 422  |
| 20°   | 493 | 488   | 479 | 478   | 469 | 459    | 456  | 447    | 447  |
| 22.5° | 513 | 499   | 479 | 471   | 480 | 475    | 474  | 470    | 467  |
| 25°   | 507 | 507   | 495 | 494   | 491 | 487    | 490  | 493    | 491  |
| 27.5° | 499 | 508   | 518 | 511   | 507 | 503    | 500  | 502    | 500  |
| 30°   | 505 | 512   | 519 | 526   | 513 | 498    | 497  | 496    | 490  |
| 32.5° | 505 | 509   | 513 | 506   | 503 | 494    | 488  | 486    | 485  |
| 35°   | 499 | 493   | 485 | 485   | 484 | 482    | 476  | 472    | 465  |
| 37.5° | 471 | 469   | 461 | 459   | 461 | 463    | 456  | 457    | 463  |
| 40°   | 442 | 443   | 442 | 434   | 432 | 434    | 439  | 438    | 436  |
| 42.5° | 410 | 413   | 404 | 399   | 403 | 403    | 406  | 404    | 408  |
| 45°   | 381 | 375   | 382 | 372   | 372 | 372    | 379  | 375    | 374  |
| 47.5° | 350 | 354   | 360 | 360   | 347 | 343    | 350  | 346    | 342  |
| 50°   | 330 | 329   | 337 | 342   | 337 | 330    | 318  | 309    | 312  |
| 52.5° | 300 | 301   | 307 | 318   | 313 | 303    | 291  | 282    | 278  |
| 55°   | 257 | 257   | 261 | 263   | 265 | 264    | 261  | 253    | 250  |
| 57.5° | 222 | 219   | 217 | 224   | 218 | 217    | 218  | 222    | 226  |
| 60°   | 190 | 188   | 183 | 192   | 193 | 192    | 189  | 192    | 191  |
| 62.5° | 140 | 141   | 135 | 135   | 141 | 144    | 154  | 158    | 158  |
| 65°   | 82  | 81    | 79  | 82    | 85  | 90     | 96   | 103    | 105  |
| 67.5° | 24  | 27    | 29  | 32    | 34  | 35     | 39   | 41     | 39   |
| 70°   | 4   | 3     | 3   | 4     | 5   | 5      | 6    | 6      | 6    |
| 72.5° | 2   | 2     | 2   | 2     | 2   | 2      | 2    | 3      | 3    |
| 75°   | 2   | 2     | 1   | 1     | 2   | 2      | 1    | 2      | 2    |
| 77.5° | 1   | 1     | 1   | 1     | 1   | 1      | 1    | 1      | 2    |
| 80°   | 1   | 1     | 1   | 1     | 1   | 1      | 1    | 1      | 1    |
| 82.5° | 1   | 1     | 1   | 1     | 1   | 1      | 1    | 1      | 1    |
| 85°   | 1   | 1     | 0   | 0     | 0   | 0      | 0    | 1      | 1    |
| 87.5° | 0   | 0     | 0   | 0     | 0   | 0      | 0    | 0      | 0    |
| 90°   | 0   | 0     | 0   | 0     | 0   | 0      | 0    | 0      | 0    |

(END OF REPORT)