

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: NEO-RAY

Report Number: BALLABS TEST NO. 12051.0

Luminaire Tested: **S194 2/28 T5 S17F**

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-41-14  
Report Number: BALLABS TEST NO. 12051.0  
Test Lab:  
Issue Date: 3/3/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: NEO-RAY  
Catalog Number: S194 2/28 T5 S17F  
Description: 2/28W T5 LAMP 1x4'RECESSED GRID LUMINAIRE w/WHITE REFL  
Light Source: -  
FP28T5/835  
Ballast/Driver: UNIVERSAL BALLAST #B228PUNV-C WATTS=66 REFL=91%

**Summary**

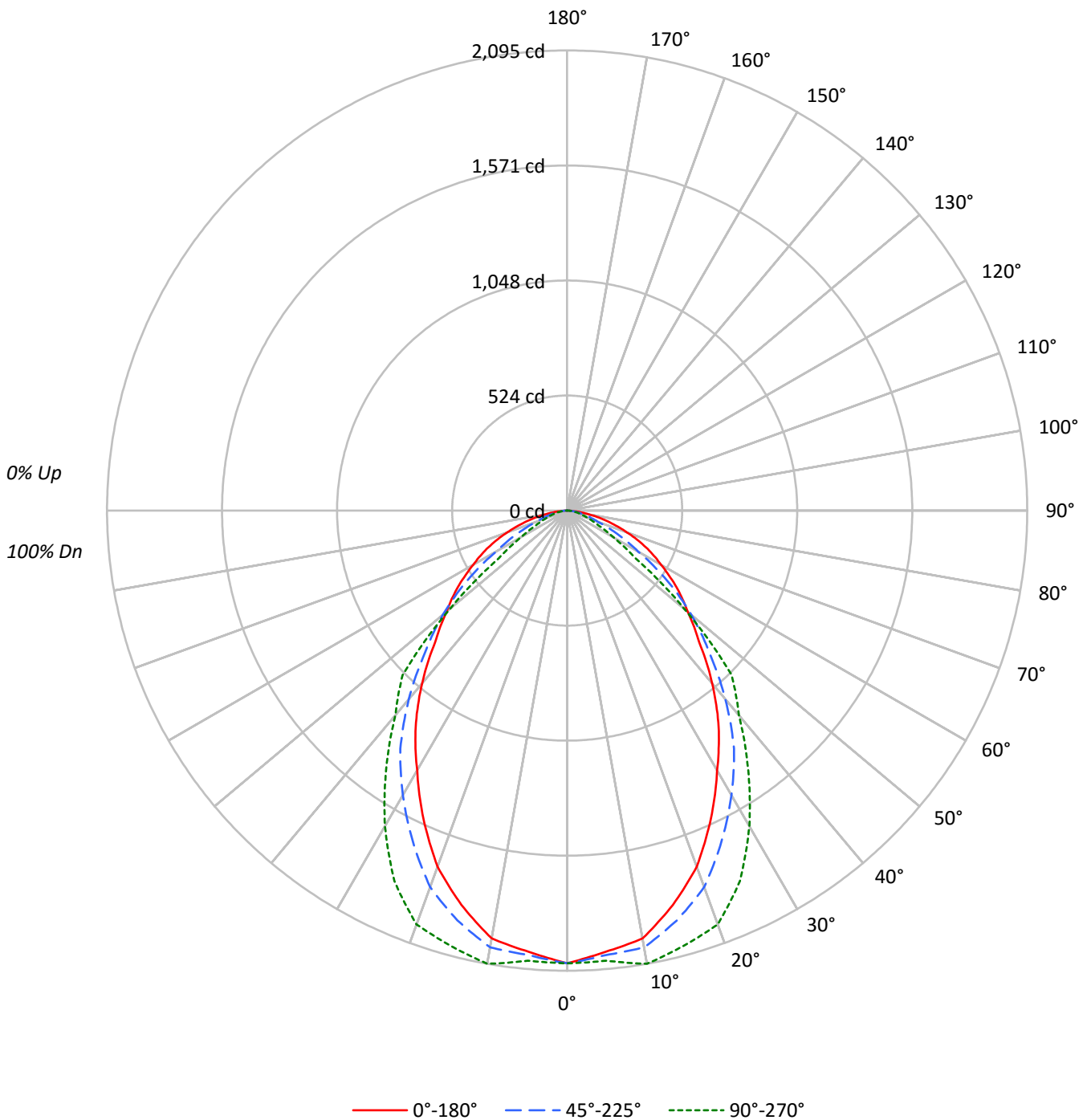
Lumens per Lamp: 2900 (2 lamps)  
Luminaire Lumens: 3946.2 lumens  
Efficiency: 68.0%  
Efficacy: 59.8 lumens/watt  
Spacing Criteria (0/90/45): 1.03 / 1.19 / 1.18  
Luminous Opening: Rectangular (W 0.89' x L: 3.92' x H: 0')  
CIE Type: Direct

Input Watts (W): 66  
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   | 81 | 81 | 81 | 81 | 79 | 79 | 79 | 79 | 76 | 76 | 76 |  | 72 | 72 | 72 |  | 69 | 69 | 69 | 68 |
| 1   | 75 | 73 | 70 | 68 | 74 | 71 | 69 | 67 | 68 | 67 | 65 |  | 66 | 64 | 63 |  | 63 | 62 | 61 | 60 |
| 2   | 70 | 65 | 61 | 58 | 68 | 64 | 60 | 57 | 61 | 58 | 56 |  | 59 | 57 | 54 |  | 57 | 55 | 53 | 52 |
| 3   | 64 | 58 | 53 | 50 | 63 | 57 | 53 | 49 | 55 | 51 | 48 |  | 53 | 50 | 48 |  | 52 | 49 | 47 | 45 |
| 4   | 60 | 52 | 47 | 43 | 58 | 52 | 47 | 43 | 50 | 46 | 42 |  | 48 | 45 | 42 |  | 47 | 44 | 41 | 40 |
| 5   | 55 | 48 | 42 | 38 | 54 | 47 | 42 | 38 | 45 | 41 | 38 |  | 44 | 40 | 37 |  | 43 | 40 | 37 | 35 |
| 6   | 51 | 43 | 38 | 34 | 50 | 43 | 38 | 34 | 42 | 37 | 34 |  | 40 | 36 | 33 |  | 39 | 36 | 33 | 32 |
| 7   | 48 | 40 | 34 | 30 | 47 | 39 | 34 | 30 | 38 | 34 | 30 |  | 37 | 33 | 30 |  | 36 | 33 | 30 | 29 |
| 8   | 45 | 36 | 31 | 28 | 44 | 36 | 31 | 27 | 35 | 31 | 27 |  | 34 | 30 | 27 |  | 34 | 30 | 27 | 26 |
| 9   | 42 | 34 | 29 | 25 | 41 | 33 | 28 | 25 | 33 | 28 | 25 |  | 32 | 28 | 25 |  | 31 | 27 | 25 | 24 |
| 10  | 40 | 31 | 26 | 23 | 39 | 31 | 26 | 23 | 30 | 26 | 23 |  | 30 | 26 | 23 |  | 29 | 25 | 23 | 22 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 6356 | 6356 | 6356 |
| 5°  | 6241 | 6288 | 6368 |
| 10° | 6195 | 6323 | 6561 |
| 15° | 5936 | 6166 | 6549 |
| 20° | 5662 | 5987 | 6581 |
| 25° | 5268 | 5659 | 6333 |
| 30° | 4865 | 5328 | 5908 |
| 35° | 4529 | 4985 | 5407 |
| 40° | 4139 | 4513 | 4896 |
| 45° | 3712 | 3991 | 4619 |
| 50° | 3440 | 3546 | 3339 |
| 55° | 3264 | 2984 | 2043 |
| 60° | 3047 | 2307 | 1493 |
| 65° | 2890 | 1846 | 1117 |
| 70° | 2615 | 1344 | 911  |
| 75° | 2288 | 1084 | 810  |
| 80° | 1865 | 870  | 693  |
| 85° | 1239 | 708  | 566  |



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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture | % Lamp |
|-----------|--------|-----------|--------|
| 0°-10°    | 194.2  | 4.9       | 3.3    |
| 10°-20°   | 547.0  | 13.9      | 9.4    |
| 20°-30°   | 771.5  | 19.6      | 13.3   |
| 30°-40°   | 819.5  | 20.8      | 14.1   |
| 40°-50°   | 713.8  | 18.1      | 12.3   |
| 50°-60°   | 481.1  | 12.2      | 8.3    |
| 60°-70°   | 271.6  | 6.9       | 4.7    |
| 70°-80°   | 120.4  | 3.1       | 2.1    |
| 80°-90°   | 27.0   | 0.7       | 0.5    |
| 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°    | 1512.8 | 38.3      | 26.1   |
| 0°-40°    | 2332.3 | 59.1      | 40.2   |
| 0°-60°    | 3527.2 | 89.4      | 60.8   |
| 0°-90°    | 3946.2 | 100.0     | 68.0   |
| 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°   | 3946.2 | 100.0     | 68.0   |

**CANDELA DISTRIBUTION:**

|     | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|-----|------|-------|------|-------|------|------|
| 0°  | 2061 | 2061  | 2061 | 2061  | 2061 |      |
| 5°  | 2016 | 2019  | 2031 | 2048  | 2057 | 192  |
| 15° | 1859 | 1879  | 1931 | 1999  | 2051 | 523  |
| 25° | 1548 | 1581  | 1663 | 1771  | 1861 | 712  |
| 35° | 1203 | 1248  | 1324 | 1370  | 1436 | 751  |
| 45° | 851  | 896   | 915  | 959   | 1059 | 665  |
| 55° | 607  | 607   | 555  | 445   | 380  | 542  |
| 65° | 396  | 378   | 253  | 178   | 153  | 390  |
| 75° | 192  | 145   | 91   | 76    | 68   | 205  |
| 85° | 35   | 24    | 20   | 16    | 16   | 48   |
| 90° | 0    | 0     | 0    | 0     | 0    |      |



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**CANDELA DISTRIBUTION (FULL):**

|     | 0°   | 22.5° | 45°  | 67.5° | 90°  |
|-----|------|-------|------|-------|------|
| 0°  | 2061 | 2061  | 2061 | 2061  | 2061 |
| 5°  | 2016 | 2019  | 2031 | 2048  | 2057 |
| 10° | 1978 | 1986  | 2019 | 2065  | 2095 |
| 15° | 1859 | 1879  | 1931 | 1999  | 2051 |
| 20° | 1725 | 1754  | 1824 | 1921  | 2005 |
| 25° | 1548 | 1581  | 1663 | 1771  | 1861 |
| 30° | 1366 | 1406  | 1496 | 1580  | 1659 |
| 35° | 1203 | 1248  | 1324 | 1370  | 1436 |
| 40° | 1028 | 1072  | 1121 | 1137  | 1216 |
| 45° | 851  | 896   | 915  | 959   | 1059 |
| 50° | 717  | 743   | 739  | 724   | 696  |
| 55° | 607  | 607   | 555  | 445   | 380  |
| 60° | 494  | 486   | 374  | 282   | 242  |
| 65° | 396  | 378   | 253  | 178   | 153  |
| 70° | 290  | 255   | 149  | 117   | 101  |
| 75° | 192  | 145   | 91   | 76    | 68   |
| 80° | 105  | 63    | 49   | 42    | 39   |
| 85° | 35   | 24    | 20   | 16    | 16   |
| 90° | 0    | 0     | 0    | 0     | 0    |

(END OF REPORT)