

Signify Classified - Internal  
Cooper Lighting Solutions Photometric Lab  
1121 Highway 74 South  
Peachtree City, GA 30269



Scaled data based on original data using  
LM-79-2019 Approved Method: Electrical and Photometric Measurements of Solid-  
State Lighting Products

Test Report Prepared for  
Cooper Lighting Solutions

Brand: NEO-RAY

Report Number: P644473

Luminaire Tested: CRQ4DP-SR4F0-50D840-FLL-1DUDD-WW

Issue Date: 2/20/2023



**Test Information**

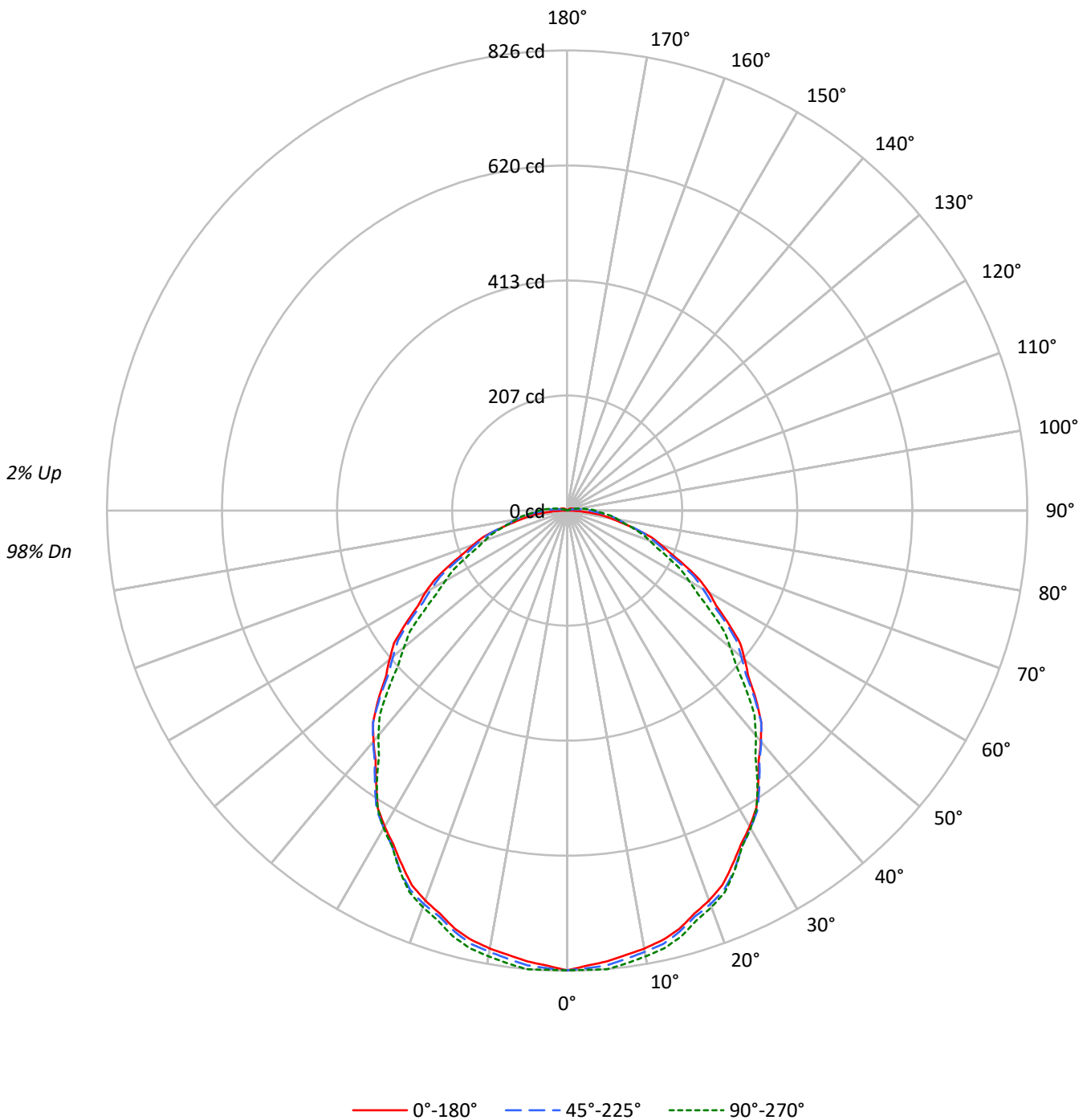
Test Method: LM-79-2019  
Report Number: P644473  
REPORT IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-2206-689-14)  
Test Lab: INNOVATION CENTER  
Issue Date: 2/20/2023  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: CRQ4DP-SR4F0-50D840-FLL-1DUDD-WW  
Description: NEO-RAY CIRQUE SUSPENDED LED LUMINAIRE  
DOWNLIGHT - CURVED FROSTED LENS - 500 LUMENS PER FOOT  
DIRECT ONLY  
Light Source: 4000K CCT, 80 CRI LEDS  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 2127.2 lumens  
Efficiency: N/A  
Efficacy: 148.8 lumens/watt  
Spacing Criteria (0/90/45): 1.19 / 1.19 / 1.3  
Luminous Opening: Rectangular w/ Sides (W: 0.17' x L: 4' x H: 0.02')  
CIE Type: Direct  
  
Input Watts (W): 14.3  
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: 24 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 | 110 | 110 | 110 |  | 105 | 105 | 105 |  | 100 | 100 | 100 | 98 |
| 1   | 108 | 103 | 99  | 95  | 105 | 101 | 97  | 93  | 96  | 93  | 90  |  | 92  | 89  | 87  |  | 88  | 86  | 84  | 82 |
| 2   | 99  | 91  | 84  | 78  | 96  | 88  | 82  | 77  | 85  | 79  | 75  |  | 81  | 77  | 73  |  | 78  | 74  | 71  | 69 |
| 3   | 90  | 80  | 72  | 65  | 88  | 78  | 71  | 65  | 75  | 69  | 63  |  | 72  | 67  | 62  |  | 69  | 65  | 61  | 58 |
| 4   | 83  | 71  | 62  | 56  | 80  | 70  | 62  | 55  | 67  | 60  | 54  |  | 64  | 58  | 53  |  | 62  | 57  | 53  | 50 |
| 5   | 76  | 64  | 55  | 48  | 74  | 63  | 54  | 48  | 60  | 53  | 47  |  | 58  | 52  | 47  |  | 56  | 50  | 46  | 44 |
| 6   | 71  | 58  | 49  | 43  | 69  | 57  | 48  | 42  | 55  | 47  | 42  |  | 53  | 46  | 41  |  | 51  | 45  | 41  | 39 |
| 7   | 66  | 52  | 44  | 38  | 64  | 51  | 43  | 38  | 50  | 42  | 37  |  | 48  | 42  | 37  |  | 47  | 41  | 36  | 34 |
| 8   | 61  | 48  | 40  | 34  | 60  | 47  | 39  | 34  | 46  | 38  | 33  |  | 44  | 38  | 33  |  | 43  | 37  | 33  | 31 |
| 9   | 57  | 44  | 36  | 31  | 56  | 43  | 36  | 30  | 42  | 35  | 30  |  | 41  | 35  | 30  |  | 40  | 34  | 30  | 28 |
| 10  | 54  | 41  | 33  | 28  | 52  | 40  | 33  | 28  | 39  | 32  | 27  |  | 38  | 32  | 27  |  | 37  | 31  | 27  | 25 |

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

|     | 0°    | 45°   | 90°   |
|-----|-------|-------|-------|
| 0°  | 13322 | 13322 | 13322 |
| 5°  | 13158 | 13152 | 13219 |
| 10° | 13074 | 12931 | 12974 |
| 15° | 12971 | 12696 | 12716 |
| 20° | 12766 | 12416 | 12342 |
| 25° | 12463 | 12044 | 11857 |
| 30° | 12168 | 11541 | 11298 |
| 35° | 11732 | 11001 | 10622 |
| 40° | 11337 | 10453 | 9862  |
| 45° | 10869 | 9777  | 9024  |
| 50° | 10372 | 9054  | 8147  |
| 55° | 9852  | 8388  | 7268  |
| 60° | 9382  | 7644  | 6482  |
| 65° | 8788  | 6875  | 5793  |
| 70° | 8275  | 6203  | 5259  |
| 75° | 7675  | 5663  | 4895  |
| 80° | 7112  | 5265  | 4682  |
| 85° | 6657  | 5248  | 4695  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 10869 cd/sqm



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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 77.9   | 3.7       |
| 10°-20°   | 221.0  | 10.4      |
| 20°-30°   | 326.2  | 15.3      |
| 30°-40°   | 375.1  | 17.6      |
| 40°-50°   | 363.8  | 17.1      |
| 50°-60°   | 304.6  | 14.3      |
| 60°-70°   | 219.4  | 10.3      |
| 70°-80°   | 134.1  | 6.3       |
| 80°-90°   | 65.1   | 3.1       |
| 90°-100°  | 25.8   | 1.2       |
| 100°-110° | 9.3    | 0.4       |
| 110°-120° | 3.2    | 0.2       |
| 120°-130° | 1.4    | 0.1       |
| 130°-140° | 0.2    | 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°    | 625.1  | 29.4      |
| 0°-40°    | 1000.2 | 47.0      |
| 0°-60°    | 1668.6 | 78.4      |
| 0°-90°    | 2087.3 | 98.1      |
| 90°-120°  | 38.4   | 1.8       |
| 90°-150°  | 39.9   | 1.9       |
| 90°-180°  | 40.0   | 1.9       |
| 0°-180°   | 2127.2 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°  | 22.5° | 45° | 67.5° | 90° | Flux |
|------|-----|-------|-----|-------|-----|------|
| 0°   | 825 | 825   | 825 | 825   | 825 |      |
| 5°   | 812 | 827   | 819 | 821   | 826 | 77   |
| 15°  | 777 | 789   | 782 | 786   | 791 | 219  |
| 25°  | 702 | 713   | 711 | 708   | 712 | 323  |
| 35°  | 598 | 607   | 601 | 596   | 596 | 374  |
| 45°  | 479 | 484   | 476 | 461   | 454 | 369  |
| 55°  | 353 | 358   | 345 | 324   | 314 | 317  |
| 65°  | 233 | 234   | 223 | 206   | 200 | 232  |
| 75°  | 126 | 126   | 128 | 125   | 122 | 135  |
| 85°  | 38  | 46    | 64  | 69    | 69  | 41   |
| 90°  | 4   | 23    | 42  | 49    | 50  | 4    |
| 95°  | 12  | 10    | 24  | 33    | 34  | 10   |
| 105° | 12  | 5     | 6   | 10    | 13  | 12   |
| 115° | 8   | 4     | 2   | 2     | 2   | 8    |
| 125° | 5   | 2     | 1   | 0     | 0   | 4    |
| 135° | 0   | 0     | 0   | 0     | 0   | 0    |
| 145° | 0   | 0     | 0   | 0     | 0   | 0    |
| 155° | 0   | 0     | 0   | 0     | 0   | 0    |
| 165° | 0   | 0     | 0   | 0     | 0   | 0    |
| 175° | 0   | 0     | 0   | 0     | 0   | 0    |
| 180° | 0   | 0     | 0   | 0     | 0   | 0    |



TEST NUMBER: P644473

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°    | 22.5° | 45°   | 67.5° | 90°   |
|--------|-------|-------|-------|-------|-------|
| 0°     | 825.1 | 825.1 | 825.1 | 825.1 | 825.1 |
| 2.5°   | 817.6 | 829.5 | 822.3 | 824.2 | 825.1 |
| 5°     | 812.3 | 827.1 | 819.3 | 820.6 | 826.3 |
| 7.5°   | 804.8 | 818.5 | 811.6 | 813.1 | 819.7 |
| 10°    | 798.3 | 812.0 | 804.1 | 806.6 | 812.3 |
| 12.5°  | 789.9 | 802.7 | 796.7 | 799.1 | 804.8 |
| 15°    | 777.3 | 788.7 | 782.0 | 785.6 | 791.3 |
| 17.5°  | 758.7 | 771.0 | 763.8 | 765.8 | 771.5 |
| 20°    | 744.7 | 756.1 | 751.7 | 751.8 | 757.5 |
| 22.5°  | 727.9 | 740.2 | 736.8 | 734.1 | 740.7 |
| 25°    | 701.6 | 713.0 | 710.9 | 707.5 | 712.1 |
| 27.5°  | 675.5 | 683.9 | 679.9 | 676.5 | 679.9 |
| 30°    | 655.0 | 665.2 | 658.5 | 655.0 | 658.5 |
| 32.5°  | 632.6 | 642.8 | 636.1 | 631.7 | 633.3 |
| 35°    | 597.8 | 607.0 | 601.3 | 595.5 | 595.5 |
| 37.5°  | 565.0 | 570.9 | 567.1 | 557.2 | 554.7 |
| 40°    | 540.7 | 547.6 | 541.9 | 530.2 | 526.8 |
| 42.5°  | 515.6 | 522.4 | 515.8 | 503.1 | 497.9 |
| 45°    | 479.0 | 483.5 | 475.5 | 461.3 | 454.5 |
| 47.5°  | 441.2 | 446.0 | 434.9 | 419.4 | 411.2 |
| 50°    | 416.0 | 421.7 | 407.9 | 391.4 | 382.3 |
| 52.5°  | 391.8 | 395.7 | 382.7 | 363.4 | 355.2 |
| 55°    | 353.1 | 357.7 | 345.0 | 323.7 | 313.5 |
| 57.5°  | 317.0 | 321.3 | 306.3 | 286.0 | 278.1 |
| 60°    | 293.7 | 297.1 | 282.0 | 260.9 | 252.9 |
| 62.5°  | 267.6 | 271.0 | 256.9 | 238.5 | 230.5 |
| 65°    | 233.1 | 234.2 | 222.6 | 206.1 | 200.4 |
| 67.5°  | 200.7 | 200.7 | 190.9 | 178.7 | 174.1 |
| 70°    | 178.3 | 178.3 | 171.3 | 161.9 | 157.3 |
| 72.5°  | 157.8 | 156.9 | 152.7 | 146.1 | 142.4 |
| 75°    | 125.9 | 125.9 | 128.2 | 124.6 | 122.4 |
| 77.5°  | 97.9  | 96.1  | 106.1 | 105.6 | 104.4 |
| 80°    | 79.2  | 79.2  | 92.1  | 94.4  | 93.2  |
| 82.5°  | 62.5  | 64.3  | 80.9  | 84.1  | 83.0  |
| 85°    | 38.5  | 46.4  | 64.1  | 68.8  | 68.8  |
| 87.5°  | 17.5  | 31.4  | 50.3  | 56.4  | 56.6  |
| 90°    | 3.5   | 22.9  | 42.0  | 49.0  | 50.1  |
| 92.5°  | 7.2   | 17.5  | 34.5  | 41.5  | 43.6  |
| 95°    | 11.7  | 10.5  | 24.5  | 32.7  | 33.8  |
| 97.5°  | 14.0  | 6.9   | 17.7  | 24.5  | 25.9  |
| 100°   | 14.0  | 6.0   | 14.0  | 19.9  | 22.1  |
| 102.5° | 13.1  | 5.1   | 10.3  | 16.1  | 17.5  |
| 105°   | 11.7  | 4.8   | 5.8   | 10.5  | 12.8  |
| 107.5° | 10.3  | 3.6   | 3.3   | 6.6   | 7.7   |
| 110°   | 9.3   | 3.6   | 2.3   | 4.7   | 5.8   |



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**CANDELA DISTRIBUTION (continued):**

|        | 0°  | 22.5° | 45° | 67.5° | 90° |
|--------|-----|-------|-----|-------|-----|
| 112.5° | 9.3 | 3.6   | 2.3 | 2.8   | 4.0 |
| 115°   | 8.2 | 3.6   | 2.3 | 2.3   | 2.3 |
| 117.5° | 6.8 | 3.6   | 2.1 | 0.9   | 0.9 |
| 120°   | 5.8 | 3.5   | 1.2 | 0.0   | 0.0 |
| 122.5° | 5.8 | 2.6   | 1.2 | 0.0   | 0.0 |
| 125°   | 4.7 | 2.4   | 1.2 | 0.0   | 0.0 |
| 127.5° | 3.3 | 2.4   | 1.2 | 0.0   | 0.0 |
| 130°   | 2.3 | 2.3   | 1.2 | 0.0   | 0.0 |
| 132.5° | 0.5 | 0.5   | 0.2 | 0.0   | 0.0 |
| 135°   | 0.0 | 0.0   | 0.0 | 0.0   | 0.0 |
| 137.5° | 0.0 | 0.0   | 0.0 | 0.0   | 0.0 |
| 140°   | 0.0 | 0.0   | 0.0 | 0.0   | 0.0 |
| 142.5° | 0.0 | 0.0   | 0.0 | 0.0   | 0.0 |
| 145°   | 0.0 | 0.0   | 0.0 | 0.0   | 0.0 |
| 147.5° | 0.0 | 0.0   | 0.0 | 0.0   | 0.0 |
| 150°   | 0.0 | 0.0   | 0.0 | 0.0   | 0.0 |
| 152.5° | 0.0 | 0.0   | 0.0 | 0.0   | 0.0 |
| 155°   | 0.0 | 0.0   | 0.0 | 0.0   | 0.0 |
| 157.5° | 0.0 | 0.0   | 0.0 | 0.0   | 0.0 |
| 160°   | 0.0 | 0.0   | 0.0 | 0.0   | 0.0 |
| 162.5° | 0.0 | 0.0   | 0.0 | 0.0   | 0.0 |
| 165°   | 0.0 | 0.0   | 0.0 | 0.0   | 0.0 |
| 167.5° | 0.0 | 0.0   | 0.0 | 0.0   | 0.0 |
| 170°   | 0.0 | 0.0   | 0.0 | 0.0   | 0.0 |
| 172.5° | 0.0 | 0.0   | 0.0 | 0.0   | 0.0 |
| 175°   | 0.0 | 0.0   | 0.0 | 0.0   | 0.0 |
| 177.5° | 0.0 | 0.0   | 0.0 | 0.0   | 0.0 |
| 180°   | 0.0 | 0.0   | 0.0 | 0.0   | 0.0 |

(END OF REPORT)