

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: P929841

Luminaire Tested: DFN2DS-4P3F0-020DS830-FLL

Issue Date: 11/20/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P929841  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (P333812)  
Test Lab: INNOVATION CENTER  
Issue Date: 11/20/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DS-4P3F0-020DS830-FLL  
Description: 3 foot, 90deg - 4way Define Geo, with Direct Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

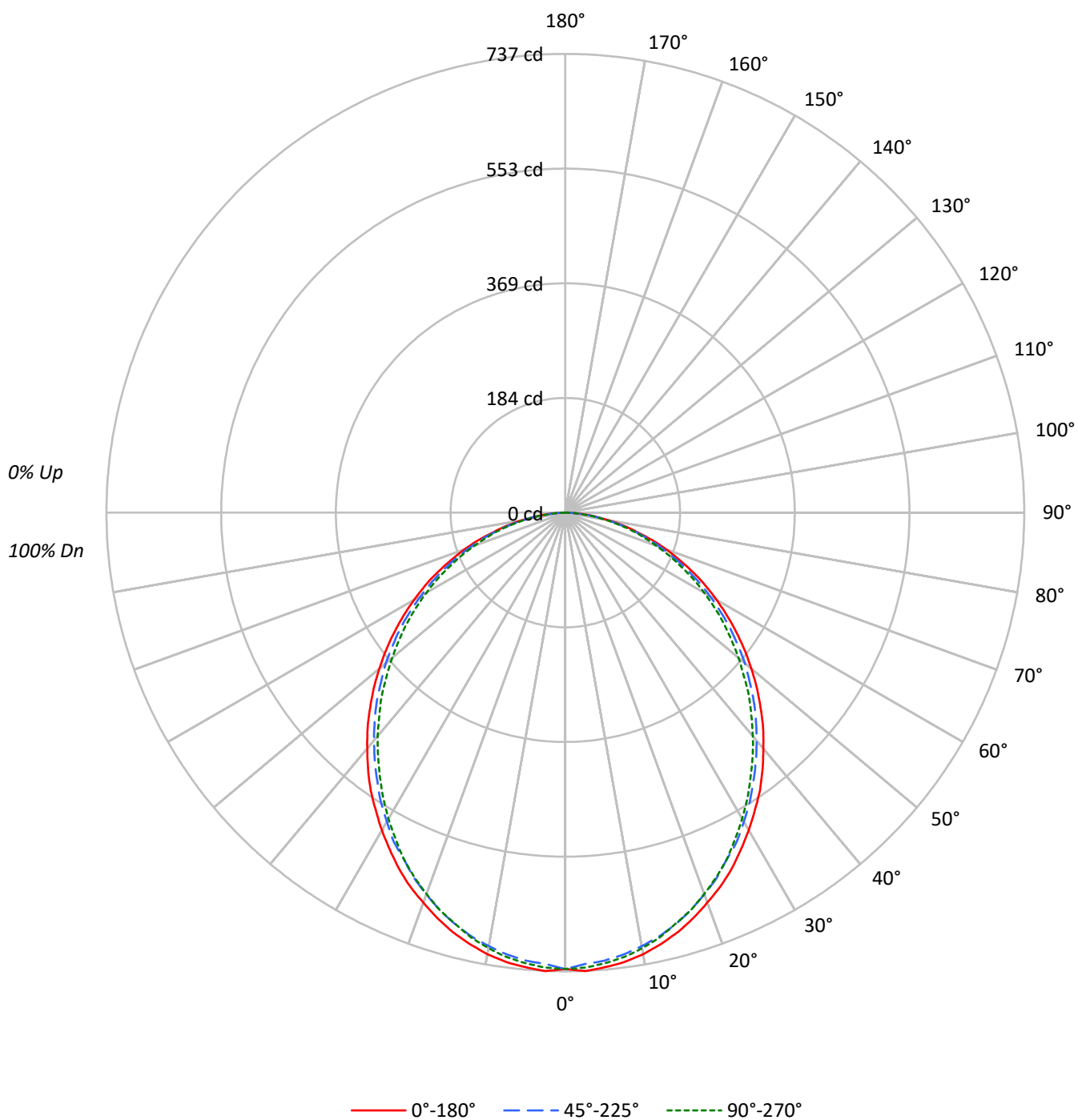
Lumens per Lamp: N/A  
Luminaire Lumens: 1865.2 lumens  
Efficiency: N/A  
Efficacy: 100.3 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
Luminous Opening: Rectangular (W 3.07' x L: 3.07' x H: 0')  
CIE Type: Direct

Input Watts (W): 18.6  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9951  
Total Harmonic Distortion (THDi): 0.07  
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  |
| RW  | 70  | 50  | 30  | 10  | 70  | 50  | 30  | 10  | 50  | 30  | 10  |  | 50  | 30  | 10  |  | 50  |
| RCR |     |     |     |     |     |     |     |     |     |     |     |  |     |     |     |  |     |
| 0   | 119 | 119 | 119 | 119 | 116 | 116 | 116 | 116 | 111 | 111 | 111 |  | 106 | 106 | 106 |  | 102 |
| 1   | 109 | 104 | 100 | 96  | 106 | 102 | 98  | 95  | 98  | 95  | 92  |  | 94  | 91  | 89  |  | 90  |
| 2   | 99  | 91  | 85  | 79  | 97  | 89  | 83  | 78  | 86  | 81  | 76  |  | 83  | 78  | 74  |  | 80  |
| 3   | 91  | 80  | 72  | 66  | 88  | 79  | 71  | 65  | 76  | 69  | 64  |  | 73  | 68  | 63  |  | 71  |
| 4   | 83  | 71  | 63  | 56  | 81  | 70  | 62  | 56  | 68  | 61  | 55  |  | 65  | 59  | 54  |  | 63  |
| 5   | 77  | 64  | 55  | 49  | 75  | 63  | 55  | 48  | 61  | 53  | 48  |  | 59  | 52  | 47  |  | 57  |
| 6   | 71  | 58  | 49  | 43  | 69  | 57  | 48  | 42  | 55  | 48  | 42  |  | 53  | 47  | 42  |  | 52  |
| 7   | 66  | 52  | 44  | 38  | 64  | 52  | 43  | 38  | 50  | 43  | 37  |  | 49  | 42  | 37  |  | 47  |
| 8   | 61  | 48  | 40  | 34  | 60  | 47  | 39  | 34  | 46  | 39  | 33  |  | 45  | 38  | 33  |  | 44  |
| 9   | 57  | 44  | 36  | 30  | 56  | 43  | 36  | 30  | 42  | 35  | 30  |  | 41  | 35  | 30  |  | 40  |
| 10  | 54  | 41  | 33  | 28  | 53  | 40  | 33  | 28  | 39  | 32  | 27  |  | 38  | 32  | 27  |  | 37  |

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

|     | 0°  | 45° | 90° |
|-----|-----|-----|-----|
| 0°  | 835 | 835 | 835 |
| 5°  | 839 | 827 | 831 |
| 10° | 834 | 818 | 822 |
| 15° | 823 | 808 | 807 |
| 20° | 809 | 792 | 791 |
| 25° | 794 | 772 | 772 |
| 30° | 775 | 754 | 748 |
| 35° | 758 | 733 | 722 |
| 40° | 736 | 711 | 697 |
| 45° | 715 | 690 | 673 |
| 50° | 691 | 667 | 644 |
| 55° | 667 | 641 | 618 |
| 60° | 639 | 611 | 588 |
| 65° | 610 | 580 | 553 |
| 70° | 573 | 542 | 517 |
| 75° | 521 | 499 | 487 |
| 80° | 463 | 449 | 425 |
| 85° | 377 | 360 | 323 |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 715 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 69.0   | 3.7       |
| 10°-20°   | 194.1  | 10.4      |
| 20°-30°   | 285.3  | 15.3      |
| 30°-40°   | 331.4  | 17.8      |
| 40°-50°   | 330.9  | 17.7      |
| 50°-60°   | 288.6  | 15.5      |
| 60°-70°   | 213.3  | 11.4      |
| 70°-80°   | 120.7  | 6.5       |
| 80°-90°   | 31.9   | 1.7       |
| 90°-100°  | 0.0    | 0.0       |
| 100°-110° | 0.0    | 0.0       |
| 110°-120° | 0.0    | 0.0       |
| 120°-130° | 0.0    | 0.0       |
| 130°-140° | 0.0    | 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°    | 548.4  | 29.4      |
| 0°-40°    | 879.8  | 47.2      |
| 0°-60°    | 1499.3 | 80.4      |
| 0°-90°    | 1865.2 | 100.0     |
| 90°-120°  | 0.0    | 0.0       |
| 90°-150°  | 0.0    | 0.0       |
| 90°-180°  | 0.0    | 0.0       |
| 0°-180°   | 1865.2 | 100.0     |

**CANDELA DISTRIBUTION:**

|     | 0°  | 22.5° | 45° | 67.5° | 90° | Flux |
|-----|-----|-------|-----|-------|-----|------|
| 0°  | 733 | 733   | 733 | 733   | 733 |      |
| 5°  | 733 | 730   | 722 | 728   | 727 | 70   |
| 15° | 698 | 694   | 684 | 687   | 684 | 197  |
| 25° | 632 | 626   | 614 | 615   | 614 | 291  |
| 35° | 545 | 538   | 527 | 522   | 519 | 340  |
| 45° | 443 | 438   | 428 | 420   | 417 | 342  |
| 55° | 336 | 331   | 323 | 314   | 311 | 300  |
| 65° | 226 | 222   | 215 | 209   | 205 | 224  |
| 75° | 118 | 117   | 113 | 109   | 111 | 126  |
| 85° | 29  | 28    | 28  | 25    | 25  | 34   |
| 90° | 0   | 0     | 0   | 0     | 0   |      |

TEST NUMBER: P929841

CATALOG NUMBER: DFN2DS-4P3F0-020DS830-FLL

**CANDELA DISTRIBUTION (FULL):**

|       | 0°    | 22.5° | 45°   | 67.5° | 90°   |
|-------|-------|-------|-------|-------|-------|
| 0°    | 733.1 | 733.1 | 733.1 | 733.1 | 733.1 |
| 2.5°  | 737.3 | 733.8 | 726.0 | 733.1 | 731.7 |
| 5°    | 733.1 | 730.3 | 722.5 | 728.2 | 726.8 |
| 7.5°  | 728.2 | 723.9 | 716.2 | 721.9 | 720.4 |
| 10°   | 720.4 | 715.5 | 707.1 | 712.6 | 710.6 |
| 12.5° | 709.8 | 705.7 | 697.2 | 700.7 | 699.2 |
| 15°   | 697.8 | 693.7 | 684.5 | 687.3 | 683.8 |
| 17.5° | 683.0 | 678.9 | 669.7 | 673.2 | 669.7 |
| 20°   | 666.8 | 662.6 | 652.7 | 654.9 | 652.1 |
| 22.5° | 650.6 | 644.3 | 635.1 | 635.1 | 633.7 |
| 25°   | 631.6 | 626.0 | 614.0 | 615.3 | 614.0 |
| 27.5° | 610.4 | 605.5 | 596.4 | 594.3 | 590.7 |
| 30°   | 589.3 | 583.7 | 573.1 | 571.0 | 568.1 |
| 32.5° | 566.7 | 562.6 | 551.3 | 547.0 | 544.2 |
| 35°   | 544.9 | 537.9 | 526.6 | 522.3 | 518.8 |
| 37.5° | 520.3 | 513.9 | 502.6 | 497.7 | 494.1 |
| 40°   | 494.8 | 489.2 | 477.9 | 471.7 | 468.7 |
| 42.5° | 470.2 | 464.5 | 453.3 | 446.2 | 442.0 |
| 45°   | 443.4 | 438.5 | 427.9 | 420.1 | 417.3 |
| 47.5° | 417.3 | 412.4 | 401.1 | 393.3 | 389.1 |
| 50°   | 389.8 | 386.3 | 376.4 | 366.5 | 363.0 |
| 52.5° | 363.0 | 358.1 | 348.9 | 341.2 | 336.3 |
| 55°   | 335.5 | 331.3 | 322.8 | 314.4 | 310.9 |
| 57.5° | 308.0 | 304.5 | 295.3 | 286.9 | 284.0 |
| 60°   | 280.5 | 277.8 | 267.9 | 260.1 | 258.0 |
| 62.5° | 253.8 | 248.8 | 241.8 | 234.7 | 231.9 |
| 65°   | 226.3 | 222.0 | 215.1 | 208.7 | 205.2 |
| 67.5° | 198.1 | 194.5 | 188.2 | 183.3 | 180.5 |
| 70°   | 172.0 | 169.2 | 162.8 | 157.9 | 155.1 |
| 72.5° | 145.3 | 142.4 | 138.9 | 134.0 | 131.9 |
| 75°   | 118.4 | 117.1 | 113.4 | 109.3 | 110.7 |
| 77.5° | 94.5  | 91.7  | 90.1  | 88.1  | 86.0  |
| 80°   | 70.6  | 69.8  | 68.4  | 66.2  | 64.8  |
| 82.5° | 47.9  | 47.9  | 47.3  | 44.5  | 44.5  |
| 85°   | 28.8  | 28.2  | 27.5  | 25.3  | 24.7  |
| 87.5° | 12.7  | 11.3  | 9.9   | 7.8   | 7.1   |
| 90°   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |

TEST NUMBER: P929841

CATALOG NUMBER: DFN2DS-4P3F0-020DS830-FLL

**CIE UGR TABLE:**

| Reflectances:   |      |                  |       |       |       |       |                |       |       |       |       |
|-----------------|------|------------------|-------|-------|-------|-------|----------------|-------|-------|-------|-------|
| Ceiling         |      | 0.7              | 0.7   | 0.5   | 0.5   | 0.3   | 0.7            | 0.7   | 0.5   | 0.5   | 0.3   |
| Wall            |      | 0.5              | 0.3   | 0.5   | 0.3   | 0.3   | 0.5            | 0.3   | 0.5   | 0.3   | 0.3   |
| Reference plane |      | 0.2              | 0.2   | 0.2   | 0.2   | 0.2   | 0.2            | 0.2   | 0.2   | 0.2   | 0.2   |
| Room dimensions |      | Viewed crosswise |       |       |       |       | Viewed endwise |       |       |       |       |
| X=2H            | Y=2H | 10.66            | 12.27 | 11.02 | 12.58 | 12.90 | 10.21          | 11.82 | 10.58 | 12.14 | 12.45 |
|                 | 3H   | 12.41            | 13.86 | 12.78 | 14.19 | 14.55 | 11.92          | 13.37 | 12.29 | 13.70 | 14.06 |
|                 | 4H   | 13.05            | 14.42 | 13.45 | 14.77 | 15.15 | 12.56          | 13.93 | 12.96 | 14.28 | 14.65 |
|                 | 6H   | 13.52            | 14.79 | 13.93 | 15.16 | 15.55 | 13.02          | 14.29 | 13.43 | 14.66 | 15.05 |
|                 | 8H   | 13.67            | 14.88 | 14.09 | 15.27 | 15.67 | 13.16          | 14.37 | 13.59 | 14.76 | 15.16 |
|                 | 12H  | 13.76            | 14.92 | 14.19 | 15.30 | 15.73 | 13.25          | 14.41 | 13.67 | 14.79 | 15.22 |
| 4H              | 2H   | 11.22            | 12.59 | 11.62 | 12.93 | 13.31 | 10.87          | 12.23 | 11.26 | 12.58 | 12.96 |
|                 | 3H   | 13.19            | 14.34 | 13.60 | 14.74 | 15.14 | 12.79          | 13.93 | 13.20 | 14.33 | 14.73 |
|                 | 4H   | 13.97            | 15.01 | 14.40 | 15.42 | 15.86 | 13.55          | 14.58 | 13.98 | 15.00 | 15.43 |
|                 | 6H   | 14.57            | 15.47 | 15.02 | 15.91 | 16.37 | 14.13          | 15.04 | 14.59 | 15.48 | 15.94 |
|                 | 8H   | 14.76            | 15.60 | 15.22 | 16.05 | 16.51 | 14.32          | 15.16 | 14.78 | 15.61 | 16.07 |
|                 | 12H  | 14.89            | 15.65 | 15.37 | 16.12 | 16.59 | 14.44          | 15.20 | 14.92 | 15.67 | 16.14 |
| 8H              | 4H   | 14.24            | 15.09 | 14.70 | 15.53 | 16.00 | 13.87          | 14.72 | 14.33 | 15.16 | 15.62 |
|                 | 6H   | 14.96            | 15.66 | 15.45 | 16.15 | 16.63 | 14.58          | 15.28 | 15.07 | 15.77 | 16.24 |
|                 | 8H   | 15.22            | 15.85 | 15.73 | 16.35 | 16.84 | 14.83          | 15.46 | 15.34 | 15.96 | 16.45 |
|                 | 12H  | 15.42            | 15.97 | 15.92 | 16.47 | 17.03 | 15.00          | 15.56 | 15.51 | 16.05 | 16.61 |
| 12H             | 4H   | 14.27            | 15.03 | 14.75 | 15.51 | 15.97 | 13.91          | 14.66 | 14.39 | 15.14 | 15.61 |
|                 | 6H   | 15.00            | 15.64 | 15.51 | 16.14 | 16.63 | 14.63          | 15.27 | 15.14 | 15.77 | 16.26 |
|                 | 8H   | 15.32            | 15.88 | 15.82 | 16.37 | 16.93 | 14.94          | 15.50 | 15.45 | 15.99 | 16.55 |