

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: P930689

Luminaire Tested: DFN2DS-PN4F0-070DS835-FLL

Issue Date: 11/20/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P930689  
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-PN4F0-070DS835-FLL  
Description: 4 foot, Pentagon Define Geo, with Direct Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

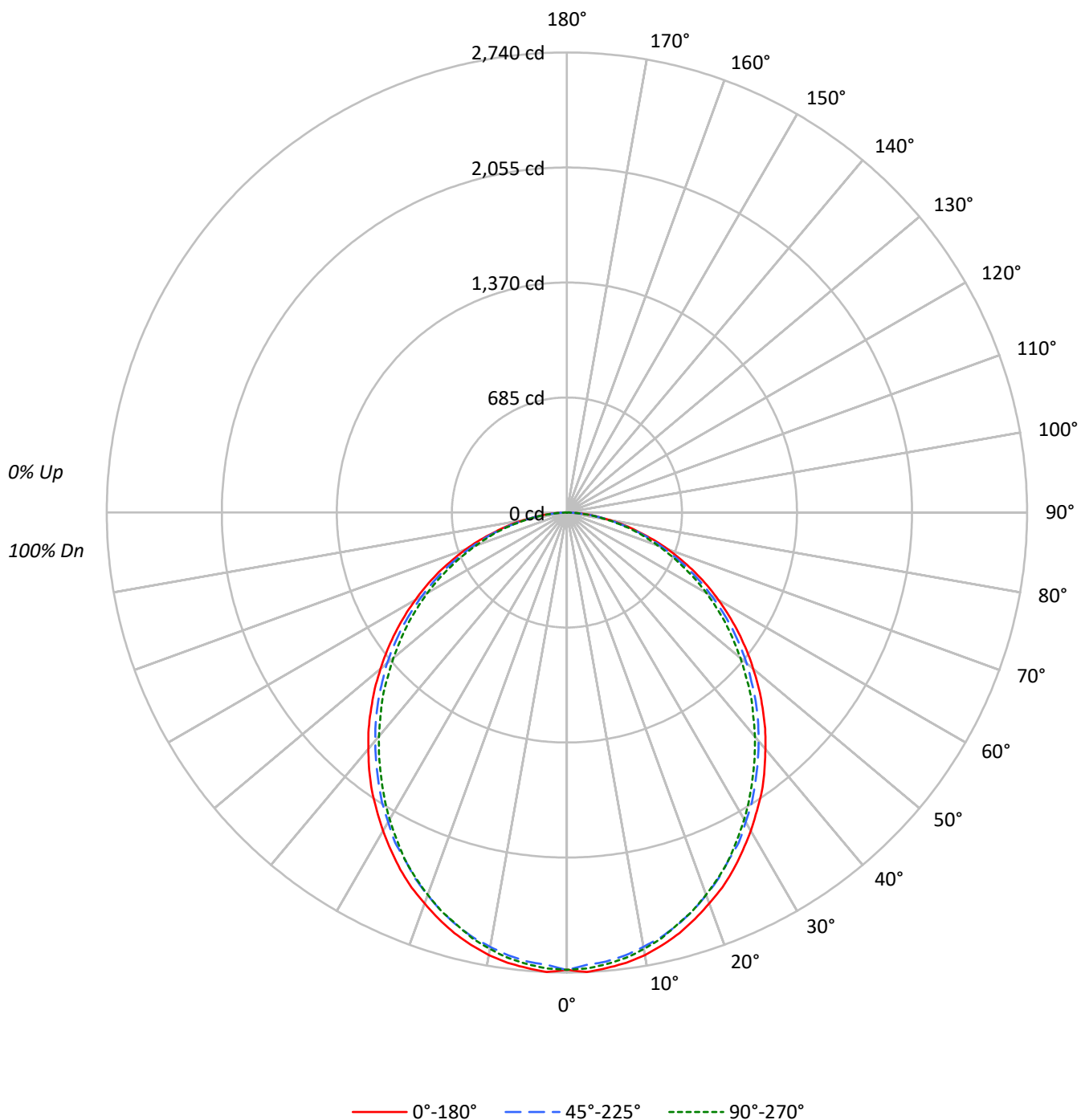
Lumens per Lamp: N/A  
Luminaire Lumens: 6930.0 lumens  
Efficiency: N/A  
Efficacy: 97.1 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
Luminous Opening: Rectangular (W 3.94' x L: 3.74' x H: 0')  
CIE Type: Direct

Input Watts (W): 71.4  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9789  
Total Harmonic Distortion (THDi): 0.074  
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°  | 1988 | 1988 | 1988 |
| 5°  | 1996 | 1967 | 1979 |
| 10° | 1984 | 1947 | 1957 |
| 15° | 1959 | 1922 | 1920 |
| 20° | 1925 | 1884 | 1882 |
| 25° | 1890 | 1837 | 1837 |
| 30° | 1846 | 1795 | 1779 |
| 35° | 1804 | 1743 | 1718 |
| 40° | 1752 | 1692 | 1660 |
| 45° | 1701 | 1641 | 1601 |
| 50° | 1645 | 1588 | 1532 |
| 55° | 1587 | 1527 | 1470 |
| 60° | 1522 | 1453 | 1400 |
| 65° | 1452 | 1380 | 1316 |
| 70° | 1364 | 1291 | 1230 |
| 75° | 1241 | 1189 | 1160 |
| 80° | 1101 | 1068 | 1013 |
| 85° | 899  | 857  | 768  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
Vertical Angle: 45°  
Luminance: 1701 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 256.4  | 3.7       |
| 10°-20°   | 721.3  | 10.4      |
| 20°-30°   | 1060.0 | 15.3      |
| 30°-40°   | 1231.1 | 17.8      |
| 40°-50°   | 1229.6 | 17.7      |
| 50°-60°   | 1072.2 | 15.5      |
| 60°-70°   | 792.6  | 11.4      |
| 70°-80°   | 448.4  | 6.5       |
| 80°-90°   | 118.4  | 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°    | 2037.7 | 29.4      |
| 0°-40°    | 3268.8 | 47.2      |
| 0°-60°    | 5570.6 | 80.4      |
| 0°-90°    | 6930.0 | 100.0     |
| 90°-120°  | 0.0    | 0.0       |
| 90°-150°  | 0.0    | 0.0       |
| 90°-180°  | 0.0    | 0.0       |
| 0°-180°   | 6930.0 | 100.0     |

**CANDELA DISTRIBUTION:**

|     | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|-----|------|-------|------|-------|------|------|
| 0°  | 2724 | 2724  | 2724 | 2724  | 2724 |      |
| 5°  | 2724 | 2714  | 2685 | 2705  | 2700 | 259  |
| 15° | 2593 | 2577  | 2543 | 2554  | 2541 | 730  |
| 25° | 2347 | 2326  | 2281 | 2286  | 2281 | 1080 |
| 35° | 2025 | 1998  | 1956 | 1941  | 1928 | 1264 |
| 45° | 1648 | 1629  | 1590 | 1561  | 1550 | 1271 |
| 55° | 1247 | 1231  | 1200 | 1168  | 1155 | 1115 |
| 65° | 841  | 825   | 799  | 775   | 762  | 831  |
| 75° | 440  | 435   | 422  | 406   | 411  | 470  |
| 85° | 107  | 105   | 102  | 94    | 92   | 126  |
| 90° | 0    | 0     | 0    | 0     | 0    |      |

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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|-------|--------|--------|--------|--------|--------|
| 0°    | 2723.7 | 2723.7 | 2723.7 | 2723.7 | 2723.7 |
| 2.5°  | 2739.6 | 2726.5 | 2697.6 | 2723.7 | 2718.7 |
| 5°    | 2723.7 | 2713.5 | 2684.6 | 2705.4 | 2700.4 |
| 7.5°  | 2705.4 | 2689.8 | 2660.9 | 2682.1 | 2676.8 |
| 10°   | 2676.8 | 2658.4 | 2627.0 | 2647.9 | 2640.1 |
| 12.5° | 2637.3 | 2621.8 | 2590.4 | 2603.4 | 2598.1 |
| 15°   | 2592.9 | 2577.3 | 2543.1 | 2553.7 | 2540.6 |
| 17.5° | 2537.8 | 2522.3 | 2488.1 | 2501.2 | 2488.1 |
| 20°   | 2477.5 | 2462.0 | 2425.3 | 2433.1 | 2422.8 |
| 22.5° | 2417.5 | 2393.9 | 2359.7 | 2359.7 | 2354.4 |
| 25°   | 2346.7 | 2325.8 | 2281.4 | 2286.4 | 2281.4 |
| 27.5° | 2268.0 | 2249.7 | 2215.8 | 2208.0 | 2194.9 |
| 30°   | 2189.7 | 2168.5 | 2129.4 | 2121.6 | 2111.0 |
| 32.5° | 2105.7 | 2090.2 | 2048.2 | 2032.4 | 2021.8 |
| 35°   | 2024.6 | 1998.5 | 1956.5 | 1940.7 | 1927.6 |
| 37.5° | 1932.9 | 1909.3 | 1867.3 | 1849.0 | 1835.9 |
| 40°   | 1838.7 | 1817.6 | 1775.6 | 1752.3 | 1741.7 |
| 42.5° | 1747.0 | 1725.9 | 1684.2 | 1657.8 | 1642.2 |
| 45°   | 1647.5 | 1629.2 | 1589.7 | 1561.1 | 1550.5 |
| 47.5° | 1550.5 | 1532.2 | 1490.2 | 1461.3 | 1445.8 |
| 50°   | 1448.3 | 1435.2 | 1398.5 | 1361.9 | 1348.8 |
| 52.5° | 1348.8 | 1330.5 | 1296.6 | 1267.7 | 1249.3 |
| 55°   | 1246.8 | 1231.0 | 1199.6 | 1168.2 | 1155.1 |
| 57.5° | 1144.6 | 1131.5 | 1097.3 | 1065.9 | 1055.4 |
| 60°   | 1042.3 | 1032.0 | 995.4  | 966.5  | 958.7  |
| 62.5° | 942.8  | 924.5  | 898.4  | 872.3  | 861.7  |
| 65°   | 840.9  | 825.0  | 798.9  | 775.3  | 762.2  |
| 67.5° | 736.1  | 722.8  | 699.4  | 681.1  | 670.5  |
| 70°   | 639.1  | 628.6  | 604.9  | 586.6  | 576.3  |
| 72.5° | 539.6  | 529.1  | 516.0  | 497.7  | 489.9  |
| 75°   | 439.9  | 434.9  | 421.5  | 406.0  | 411.3  |
| 77.5° | 351.0  | 340.4  | 335.1  | 327.3  | 319.6  |
| 80°   | 262.0  | 259.3  | 254.0  | 246.2  | 240.9  |
| 82.5° | 178.1  | 178.1  | 175.6  | 165.1  | 165.1  |
| 85°   | 107.3  | 104.8  | 102.3  | 94.2   | 91.7   |
| 87.5° | 47.2   | 42.0   | 36.7   | 28.9   | 26.1   |
| 90°   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |

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**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 | 13.67            | 15.28 | 14.04 | 15.60 | 15.91 | 13.23          | 14.84 | 13.59 | 15.15 | 15.46 |
|                 | 3H   | 15.42            | 16.87 | 15.80 | 17.20 | 17.56 | 14.93          | 16.38 | 15.31 | 16.71 | 17.07 |
|                 | 4H   | 16.07            | 17.44 | 16.47 | 17.78 | 18.16 | 15.57          | 16.94 | 15.97 | 17.29 | 17.66 |
|                 | 6H   | 16.54            | 17.80 | 16.95 | 18.17 | 18.56 | 16.03          | 17.30 | 16.45 | 17.67 | 18.06 |
|                 | 8H   | 16.68            | 17.89 | 17.10 | 18.28 | 18.68 | 16.18          | 17.39 | 16.60 | 17.78 | 18.17 |
|                 | 12H  | 16.77            | 17.93 | 17.20 | 18.31 | 18.74 | 16.26          | 17.42 | 16.69 | 17.80 | 18.23 |
| 4H              | 2H   | 14.23            | 15.60 | 14.63 | 15.95 | 16.32 | 13.88          | 15.25 | 14.28 | 15.59 | 15.97 |
|                 | 3H   | 16.21            | 17.35 | 16.62 | 17.75 | 18.15 | 15.80          | 16.95 | 16.21 | 17.34 | 17.74 |
|                 | 4H   | 16.98            | 18.02 | 17.41 | 18.43 | 18.87 | 16.56          | 17.59 | 16.99 | 18.01 | 18.44 |
|                 | 6H   | 17.58            | 18.48 | 18.03 | 18.92 | 19.38 | 17.15          | 18.05 | 17.60 | 18.49 | 18.95 |
|                 | 8H   | 17.77            | 18.61 | 18.23 | 19.06 | 19.52 | 17.33          | 18.18 | 17.79 | 18.62 | 19.08 |
|                 | 12H  | 17.90            | 18.66 | 18.38 | 19.14 | 19.61 | 17.45          | 18.21 | 17.93 | 18.68 | 19.15 |
| 8H              | 4H   | 17.26            | 18.10 | 17.72 | 18.54 | 19.01 | 16.88          | 17.73 | 17.34 | 18.17 | 18.64 |
|                 | 6H   | 17.97            | 18.67 | 18.46 | 19.16 | 19.64 | 17.59          | 18.29 | 18.08 | 18.78 | 19.26 |
|                 | 8H   | 18.23            | 18.86 | 18.74 | 19.37 | 19.85 | 17.84          | 18.47 | 18.35 | 18.98 | 19.46 |
|                 | 12H  | 18.43            | 18.99 | 18.94 | 19.48 | 20.04 | 18.02          | 18.57 | 18.52 | 19.06 | 19.63 |
| 12H             | 4H   | 17.28            | 18.04 | 17.76 | 18.52 | 18.99 | 16.92          | 17.68 | 17.40 | 18.15 | 18.62 |
|                 | 6H   | 18.02            | 18.65 | 18.53 | 19.15 | 19.64 | 17.65          | 18.28 | 18.16 | 18.79 | 19.27 |
|                 | 8H   | 18.33            | 18.89 | 18.84 | 19.38 | 19.94 | 17.95          | 18.51 | 18.46 | 19.00 | 19.56 |