

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: P930692

Luminaire Tested: DFN2DS-PN4F0-070DS840-RLL

Issue Date: 11/20/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P930692  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (P333882)  
Test Lab: INNOVATION CENTER  
Issue Date: 11/20/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DS-PN4F0-070DS840-RLL  
Description: 4 foot, Pentagon Define Geo, with Direct 1in Regressed Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

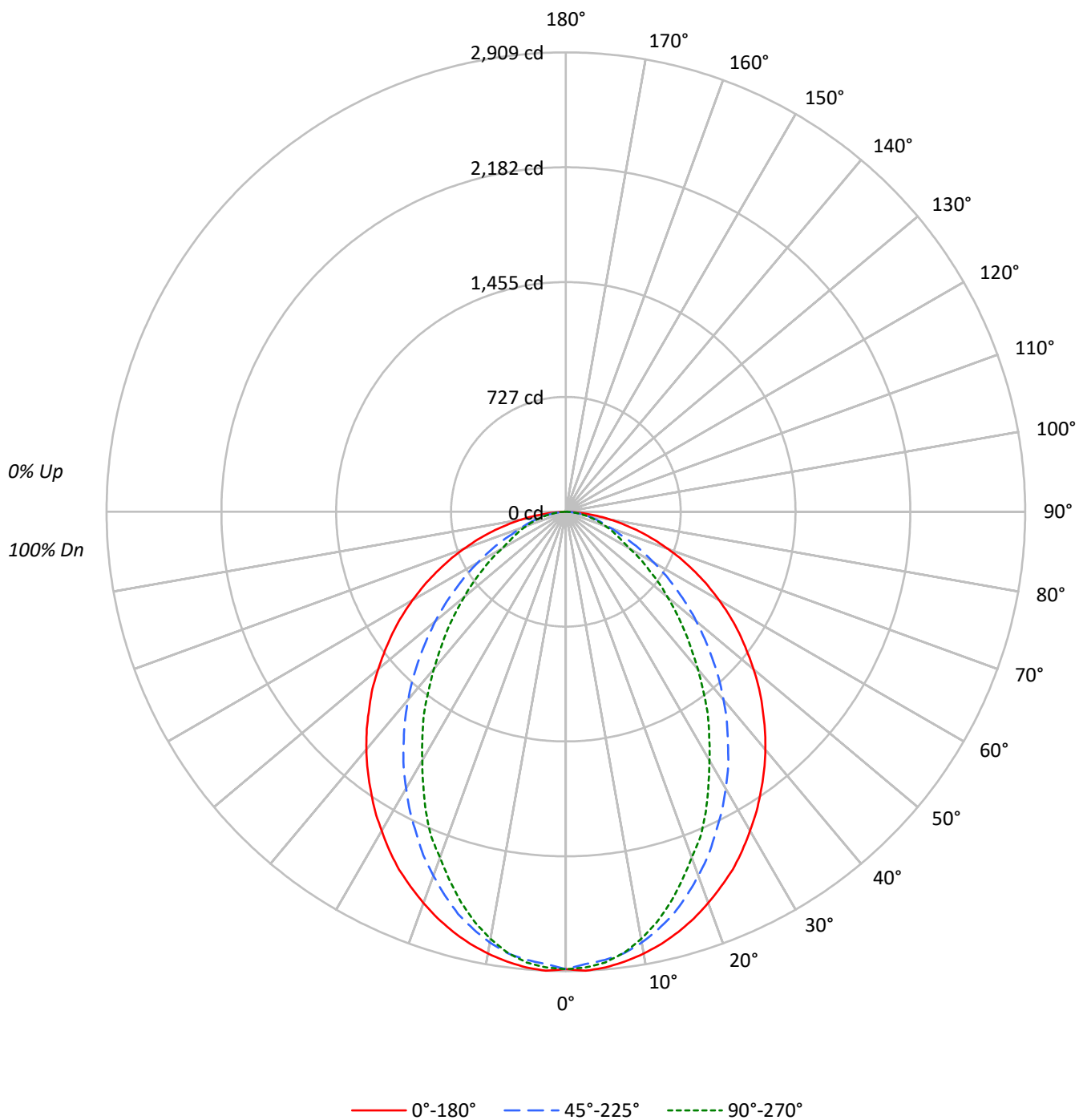
Lumens per Lamp: N/A  
Luminaire Lumens: 5955.9 lumens  
Efficiency: N/A  
Efficacy: 83.4 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular (W 3.94' x L: 3.74' x H: 0')  
CIE Type: Direct

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   | 110 | 106 | 102 | 98  | 107 | 103 | 100 | 97  | 99  | 96  | 94  |  | 95  | 93  | 91  |  | 92  |
| 2   | 101 | 94  | 87  | 82  | 98  | 92  | 86  | 81  | 88  | 83  | 79  |  | 85  | 81  | 78  |  | 82  |
| 3   | 93  | 83  | 76  | 70  | 90  | 82  | 75  | 69  | 79  | 73  | 68  |  | 76  | 71  | 67  |  | 74  |
| 4   | 86  | 75  | 66  | 60  | 83  | 73  | 66  | 60  | 71  | 64  | 59  |  | 69  | 63  | 58  |  | 66  |
| 5   | 79  | 67  | 59  | 53  | 77  | 66  | 58  | 52  | 64  | 57  | 52  |  | 62  | 56  | 51  |  | 60  |
| 6   | 74  | 61  | 53  | 47  | 72  | 60  | 52  | 46  | 58  | 51  | 46  |  | 57  | 50  | 46  |  | 55  |
| 7   | 68  | 56  | 47  | 42  | 67  | 55  | 47  | 42  | 53  | 46  | 41  |  | 52  | 46  | 41  |  | 51  |
| 8   | 64  | 51  | 43  | 38  | 62  | 51  | 43  | 37  | 49  | 42  | 37  |  | 48  | 42  | 37  |  | 47  |
| 9   | 60  | 47  | 39  | 34  | 59  | 47  | 39  | 34  | 46  | 39  | 34  |  | 44  | 38  | 34  |  | 44  |
| 10  | 56  | 44  | 36  | 31  | 55  | 43  | 36  | 31  | 42  | 36  | 31  |  | 41  | 35  | 31  |  | 41  |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 2114 | 2114 | 2114 |
| 5°  | 2122 | 2087 | 2099 |
| 10° | 2106 | 2053 | 2036 |
| 15° | 2082 | 1992 | 1935 |
| 20° | 2048 | 1906 | 1810 |
| 25° | 2014 | 1807 | 1689 |
| 30° | 1966 | 1705 | 1533 |
| 35° | 1920 | 1595 | 1397 |
| 40° | 1873 | 1481 | 1239 |
| 45° | 1818 | 1353 | 1096 |
| 50° | 1762 | 1223 | 956  |
| 55° | 1704 | 1084 | 821  |
| 60° | 1638 | 937  | 681  |
| 65° | 1562 | 788  | 620  |
| 70° | 1471 | 649  | 570  |
| 75° | 1360 | 591  | 532  |
| 80° | 1201 | 528  | 485  |
| 85° | 943  | 416  | 416  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 1818 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 271.4  | 4.6       |
| 10°-20°   | 745.1  | 12.5      |
| 20°-30°   | 1046.1 | 17.6      |
| 30°-40°   | 1140.3 | 19.1      |
| 40°-50°   | 1048.1 | 17.6      |
| 50°-60°   | 823.1  | 13.8      |
| 60°-70°   | 535.7  | 9.0       |
| 70°-80°   | 275.8  | 4.6       |
| 80°-90°   | 70.4   | 1.2       |
| 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°    | 2062.6 | 34.6      |
| 0°-40°    | 3202.9 | 53.8      |
| 0°-60°    | 5074.0 | 85.2      |
| 0°-90°    | 5955.9 | 100.0     |
| 90°-120°  | 0.0    | 0.0       |
| 90°-150°  | 0.0    | 0.0       |
| 90°-180°  | 0.0    | 0.0       |
| 0°-180°   | 5955.9 | 100.0     |

**CANDELA DISTRIBUTION:**

|     | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|-----|------|-------|------|-------|------|------|
| 0°  | 2896 | 2896  | 2896 | 2896  | 2896 |      |
| 5°  | 2896 | 2883  | 2849 | 2872  | 2865 | 275  |
| 15° | 2754 | 2726  | 2636 | 2587  | 2561 | 776  |
| 25° | 2500 | 2416  | 2243 | 2136  | 2097 | 1150 |
| 35° | 2154 | 2021  | 1790 | 1625  | 1567 | 1348 |
| 45° | 1761 | 1586  | 1310 | 1124  | 1061 | 1360 |
| 55° | 1339 | 1135  | 852  | 695   | 645  | 1197 |
| 65° | 904  | 692   | 456  | 367   | 359  | 896  |
| 75° | 482  | 299   | 210  | 191   | 189  | 510  |
| 85° | 113  | 58    | 50   | 50    | 50   | 135  |
| 90° | 0    | 0     | 0    | 0     | 0    |      |

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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|-------|--------|--------|--------|--------|--------|
| 0°    | 2896.0 | 2896.0 | 2896.0 | 2896.0 | 2896.0 |
| 2.5°  | 2909.0 | 2896.0 | 2867.1 | 2893.5 | 2888.2 |
| 5°    | 2896.0 | 2882.9 | 2848.7 | 2872.4 | 2864.6 |
| 7.5°  | 2872.4 | 2856.8 | 2820.1 | 2830.3 | 2817.3 |
| 10°   | 2840.9 | 2822.6 | 2770.3 | 2762.3 | 2746.6 |
| 12.5° | 2801.7 | 2778.1 | 2707.2 | 2691.6 | 2662.7 |
| 15°   | 2754.5 | 2725.5 | 2636.5 | 2586.8 | 2560.7 |
| 17.5° | 2699.4 | 2657.5 | 2547.3 | 2489.7 | 2447.7 |
| 20°   | 2636.5 | 2584.0 | 2453.1 | 2387.7 | 2329.8 |
| 22.5° | 2568.5 | 2508.1 | 2356.0 | 2267.0 | 2227.8 |
| 25°   | 2500.3 | 2416.3 | 2243.3 | 2136.0 | 2096.6 |
| 27.5° | 2419.1 | 2329.8 | 2138.5 | 2015.4 | 1955.1 |
| 30°   | 2332.6 | 2232.8 | 2023.1 | 1889.7 | 1818.8 |
| 32.5° | 2248.6 | 2128.0 | 1913.3 | 1756.0 | 1690.3 |
| 35°   | 2154.4 | 2020.6 | 1790.2 | 1625.0 | 1567.2 |
| 37.5° | 2062.7 | 1918.3 | 1674.8 | 1493.7 | 1428.4 |
| 40°   | 1965.6 | 1808.5 | 1554.1 | 1368.1 | 1299.9 |
| 42.5° | 1866.1 | 1698.4 | 1433.6 | 1239.5 | 1174.3 |
| 45°   | 1761.3 | 1585.5 | 1310.5 | 1124.2 | 1061.4 |
| 47.5° | 1661.7 | 1475.7 | 1192.6 | 1006.3 | 948.7  |
| 50°   | 1551.5 | 1365.6 | 1077.2 | 896.2  | 841.4  |
| 52.5° | 1443.9 | 1247.3 | 967.1  | 794.1  | 744.3  |
| 55°   | 1339.1 | 1134.7 | 851.7  | 694.6  | 644.8  |
| 57.5° | 1231.8 | 1022.1 | 749.6  | 602.8  | 560.9  |
| 60°   | 1121.7 | 912.0  | 642.0  | 508.6  | 466.6  |
| 62.5° | 1014.3 | 804.7  | 550.2  | 424.6  | 403.7  |
| 65°   | 904.2  | 691.8  | 456.1  | 367.1  | 359.0  |
| 67.5° | 799.4  | 587.0  | 367.1  | 322.2  | 314.5  |
| 70°   | 689.3  | 484.9  | 303.9  | 277.8  | 267.2  |
| 72.5° | 584.5  | 390.4  | 254.2  | 233.3  | 228.0  |
| 75°   | 482.2  | 298.6  | 209.6  | 191.3  | 188.8  |
| 77.5° | 380.1  | 212.1  | 165.2  | 154.6  | 149.3  |
| 80°   | 285.6  | 152.1  | 125.7  | 115.4  | 115.4  |
| 82.5° | 199.1  | 102.3  | 86.5   | 81.2   | 81.2   |
| 85°   | 112.6  | 57.6   | 49.7   | 49.7   | 49.7   |
| 87.5° | 41.9   | 20.8   | 20.8   | 18.3   | 18.3   |
| 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 | 13.84            | 15.36 | 14.20 | 15.67 | 15.99 | 9.80           | 11.32 | 10.16 | 11.63 | 11.95 |
|                 | 3H   | 15.60            | 16.97 | 15.98 | 17.29 | 17.66 | 11.06          | 12.43 | 11.44 | 12.75 | 13.12 |
|                 | 4H   | 16.27            | 17.55 | 16.67 | 17.90 | 18.27 | 11.56          | 12.84 | 11.96 | 13.19 | 13.57 |
|                 | 6H   | 16.76            | 17.94 | 17.17 | 18.31 | 18.70 | 11.94          | 13.13 | 12.36 | 13.49 | 13.89 |
|                 | 8H   | 16.92            | 18.05 | 17.35 | 18.44 | 18.84 | 12.07          | 13.19 | 12.49 | 13.58 | 13.99 |
|                 | 12H  | 17.02            | 18.10 | 17.45 | 18.48 | 18.91 | 12.15          | 13.23 | 12.58 | 13.61 | 14.04 |
| 4H              | 2H   | 13.94            | 15.22 | 14.34 | 15.57 | 15.95 | 10.49          | 11.77 | 10.89 | 12.12 | 12.50 |
|                 | 3H   | 15.87            | 16.94 | 16.28 | 17.34 | 17.74 | 11.93          | 13.00 | 12.35 | 13.40 | 13.80 |
|                 | 4H   | 16.62            | 17.58 | 17.05 | 17.99 | 18.43 | 12.53          | 13.49 | 12.97 | 13.91 | 14.34 |
|                 | 6H   | 17.21            | 18.05 | 17.67 | 18.49 | 18.95 | 13.02          | 13.85 | 13.48 | 14.30 | 14.76 |
|                 | 8H   | 17.43            | 18.21 | 17.89 | 18.65 | 19.12 | 13.18          | 13.96 | 13.65 | 14.41 | 14.87 |
|                 | 12H  | 17.58            | 18.28 | 18.06 | 18.75 | 19.23 | 13.30          | 14.00 | 13.78 | 14.47 | 14.95 |
| 8H              | 4H   | 16.65            | 17.42 | 17.11 | 17.87 | 18.33 | 12.89          | 13.67 | 13.35 | 14.11 | 14.58 |
|                 | 6H   | 17.28            | 17.93 | 17.78 | 18.42 | 18.89 | 13.47          | 14.12 | 13.97 | 14.61 | 15.09 |
|                 | 8H   | 17.53            | 18.11 | 18.05 | 18.62 | 19.11 | 13.70          | 14.27 | 14.21 | 14.78 | 15.27 |
|                 | 12H  | 17.74            | 18.25 | 18.25 | 18.74 | 19.30 | 13.87          | 14.38 | 14.38 | 14.88 | 15.44 |
| 12H             | 4H   | 16.63            | 17.33 | 17.11 | 17.80 | 18.27 | 12.93          | 13.63 | 13.41 | 14.10 | 14.58 |
|                 | 6H   | 17.26            | 17.84 | 17.78 | 18.35 | 18.84 | 13.54          | 14.12 | 14.05 | 14.63 | 15.11 |
|                 | 8H   | 17.55            | 18.06 | 18.06 | 18.55 | 19.12 | 13.81          | 14.32 | 14.32 | 14.81 | 15.38 |