

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: P930871

Luminaire Tested: DFN2DS-SQ2F0-070DS840-FLL

Issue Date: 11/20/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P930871  
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-SQ2F0-070DS840-FLL  
Description: 2 foot, Square Define Geo, with Direct Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

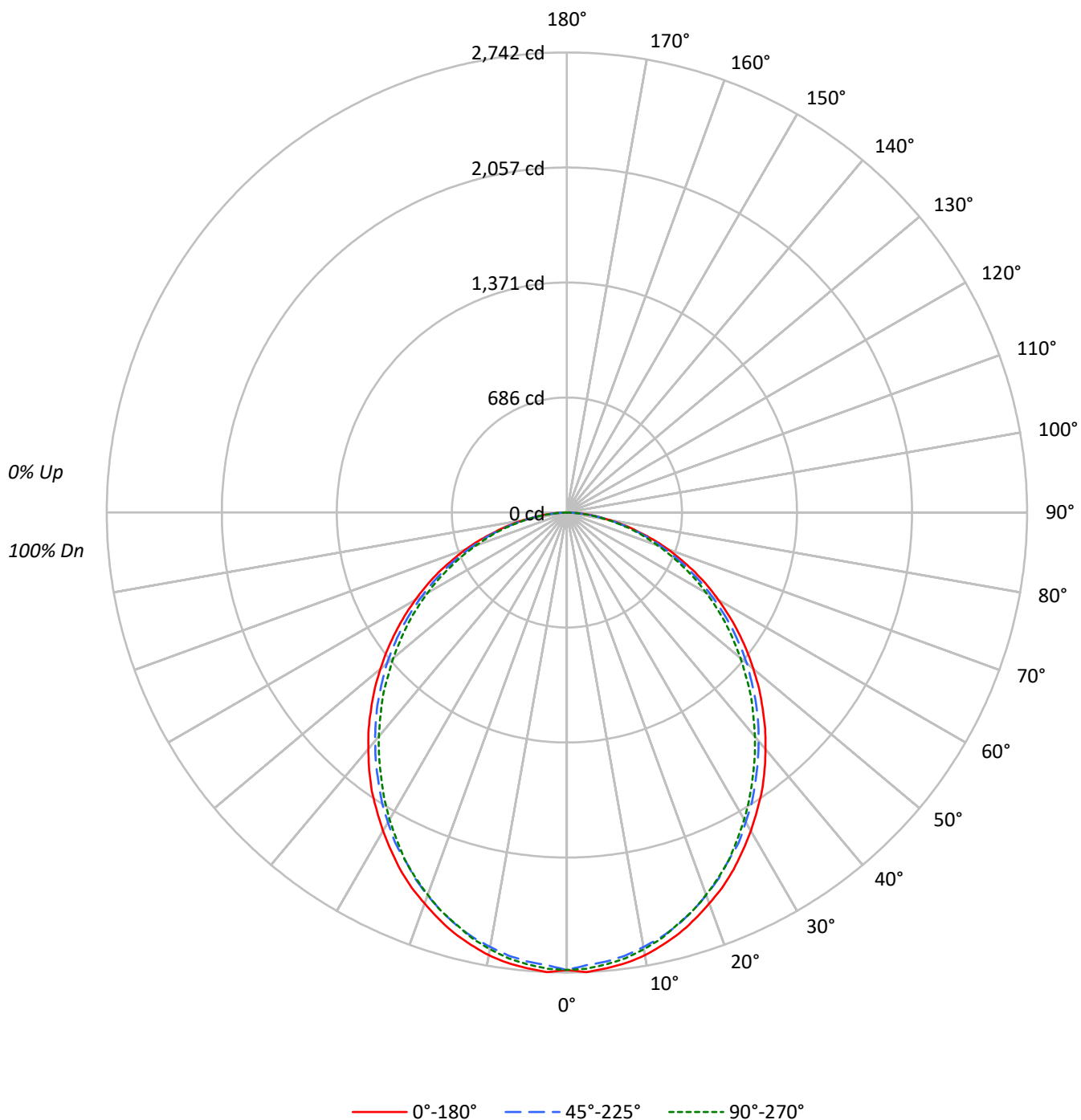
Lumens per Lamp: N/A  
Luminaire Lumens: 6936.9 lumens  
Efficiency: N/A  
Efficacy: 97.2 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
Luminous Opening: Rectangular (W 2.21' x L: 2.21' x H: 0')  
CIE Type: Direct

Input Watts (W): 71.4  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9977  
Total Harmonic Distortion (THDi): 0.049  
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°  | 5995 | 5995 | 5995 |
| 5°  | 6018 | 5932 | 5967 |
| 10° | 5983 | 5871 | 5901 |
| 15° | 5909 | 5795 | 5789 |
| 20° | 5803 | 5681 | 5675 |
| 25° | 5699 | 5541 | 5541 |
| 30° | 5565 | 5412 | 5365 |
| 35° | 5440 | 5257 | 5179 |
| 40° | 5283 | 5102 | 5004 |
| 45° | 5128 | 4948 | 4827 |
| 50° | 4959 | 4789 | 4619 |
| 55° | 4784 | 4603 | 4433 |
| 60° | 4588 | 4382 | 4221 |
| 65° | 4379 | 4161 | 3970 |
| 70° | 4113 | 3893 | 3709 |
| 75° | 3741 | 3584 | 3498 |
| 80° | 3321 | 3220 | 3053 |
| 85° | 2710 | 2583 | 2316 |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 5128 cd/sqm

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CATALOG NUMBER: DFN2DS-SQ2F0-070DS840-FLL

**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 256.6  | 3.7       |
| 10°-20°   | 722.0  | 10.4      |
| 20°-30°   | 1061.1 | 15.3      |
| 30°-40°   | 1232.4 | 17.8      |
| 40°-50°   | 1230.8 | 17.7      |
| 50°-60°   | 1073.3 | 15.5      |
| 60°-70°   | 793.4  | 11.4      |
| 70°-80°   | 448.9  | 6.5       |
| 80°-90°   | 118.5  | 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°    | 2039.7 | 29.4      |
| 0°-40°    | 3272.1 | 47.2      |
| 0°-60°    | 5576.2 | 80.4      |
| 0°-90°    | 6936.9 | 100.0     |
| 90°-120°  | 0.0    | 0.0       |
| 90°-150°  | 0.0    | 0.0       |
| 90°-180°  | 0.0    | 0.0       |
| 0°-180°   | 6936.9 | 100.0     |

**CANDELA DISTRIBUTION:**

|     | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|-----|------|-------|------|-------|------|------|
| 0°  | 2726 | 2726  | 2726 | 2726  | 2726 |      |
| 5°  | 2726 | 2716  | 2687 | 2708  | 2703 | 259  |
| 15° | 2596 | 2580  | 2546 | 2556  | 2543 | 731  |
| 25° | 2349 | 2328  | 2284 | 2289  | 2284 | 1081 |
| 35° | 2027 | 2000  | 1958 | 1943  | 1930 | 1266 |
| 45° | 1649 | 1631  | 1591 | 1563  | 1552 | 1273 |
| 55° | 1248 | 1232  | 1201 | 1169  | 1156 | 1116 |
| 65° | 842  | 826   | 800  | 776   | 763  | 832  |
| 75° | 440  | 435   | 422  | 406   | 412  | 470  |
| 85° | 107  | 105   | 102  | 94    | 92   | 126  |
| 90° | 0    | 0     | 0    | 0     | 0    |      |

TEST NUMBER: P930871

CATALOG NUMBER: DFN2DS-SQ2F0-070DS840-FLL

**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|-------|--------|--------|--------|--------|--------|
| 0°    | 2726.4 | 2726.4 | 2726.4 | 2726.4 | 2726.4 |
| 2.5°  | 2742.3 | 2729.2 | 2700.3 | 2726.4 | 2721.4 |
| 5°    | 2726.4 | 2716.2 | 2687.3 | 2708.1 | 2703.1 |
| 7.5°  | 2708.1 | 2692.5 | 2663.6 | 2684.8 | 2679.5 |
| 10°   | 2679.5 | 2661.1 | 2629.6 | 2650.5 | 2642.7 |
| 12.5° | 2639.9 | 2624.4 | 2593.0 | 2606.0 | 2600.7 |
| 15°   | 2595.5 | 2579.9 | 2545.6 | 2556.3 | 2543.1 |
| 17.5° | 2540.3 | 2524.8 | 2490.6 | 2503.7 | 2490.6 |
| 20°   | 2480.0 | 2464.5 | 2427.7 | 2435.5 | 2425.2 |
| 22.5° | 2419.9 | 2396.3 | 2362.1 | 2362.1 | 2356.8 |
| 25°   | 2349.0 | 2328.1 | 2283.7 | 2288.7 | 2283.7 |
| 27.5° | 2270.3 | 2251.9 | 2218.0 | 2210.2 | 2197.1 |
| 30°   | 2191.9 | 2170.7 | 2131.5 | 2123.7 | 2113.1 |
| 32.5° | 2107.8 | 2092.3 | 2050.2 | 2034.4 | 2023.8 |
| 35°   | 2026.6 | 2000.5 | 1958.5 | 1942.6 | 1929.5 |
| 37.5° | 1934.8 | 1911.2 | 1869.2 | 1850.8 | 1837.7 |
| 40°   | 1840.5 | 1819.4 | 1777.4 | 1754.1 | 1743.4 |
| 42.5° | 1748.7 | 1727.6 | 1685.9 | 1659.5 | 1643.8 |
| 45°   | 1649.1 | 1630.8 | 1591.3 | 1562.7 | 1552.1 |
| 47.5° | 1552.1 | 1533.7 | 1491.7 | 1462.8 | 1447.2 |
| 50°   | 1449.7 | 1436.6 | 1399.9 | 1363.3 | 1350.1 |
| 52.5° | 1350.1 | 1331.8 | 1297.9 | 1269.0 | 1250.5 |
| 55°   | 1248.0 | 1232.2 | 1200.8 | 1169.4 | 1156.3 |
| 57.5° | 1145.7 | 1132.6 | 1098.4 | 1067.0 | 1056.5 |
| 60°   | 1043.3 | 1033.0 | 996.4  | 967.5  | 959.7  |
| 62.5° | 943.7  | 925.4  | 899.3  | 873.2  | 862.6  |
| 65°   | 841.7  | 825.8  | 799.7  | 776.1  | 763.0  |
| 67.5° | 736.8  | 723.5  | 700.1  | 681.8  | 671.2  |
| 70°   | 639.7  | 629.2  | 605.5  | 587.2  | 576.9  |
| 72.5° | 540.1  | 529.6  | 516.5  | 498.2  | 490.4  |
| 75°   | 440.3  | 435.3  | 421.9  | 406.4  | 411.7  |
| 77.5° | 351.4  | 340.7  | 335.4  | 327.6  | 319.9  |
| 80°   | 262.3  | 259.6  | 254.3  | 246.4  | 241.1  |
| 82.5° | 178.3  | 178.3  | 175.8  | 165.3  | 165.3  |
| 85°   | 107.4  | 104.9  | 102.4  | 94.3   | 91.8   |
| 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 | 17.50            | 19.12 | 17.87 | 19.43 | 19.74 | 17.06          | 18.67 | 17.43 | 18.99 | 19.30 |
|                 | 3H   | 19.25            | 20.71 | 19.63 | 21.04 | 21.40 | 18.76          | 20.22 | 19.14 | 20.55 | 20.91 |
|                 | 4H   | 19.90            | 21.27 | 20.30 | 21.62 | 21.99 | 19.41          | 20.78 | 19.81 | 21.12 | 21.50 |
|                 | 6H   | 20.37            | 21.64 | 20.78 | 22.00 | 22.39 | 19.87          | 21.14 | 20.28 | 21.50 | 21.89 |
|                 | 8H   | 20.51            | 21.72 | 20.94 | 22.11 | 22.51 | 20.01          | 21.22 | 20.44 | 21.61 | 22.01 |
|                 | 12H  | 20.60            | 21.76 | 21.03 | 22.15 | 22.57 | 20.09          | 21.25 | 20.52 | 21.63 | 22.06 |
| 4H              | 2H   | 18.07            | 19.43 | 18.46 | 19.78 | 20.16 | 17.71          | 19.08 | 18.11 | 19.43 | 19.81 |
|                 | 3H   | 20.04            | 21.19 | 20.45 | 21.58 | 21.98 | 19.63          | 20.78 | 20.04 | 21.18 | 21.58 |
|                 | 4H   | 20.82            | 21.85 | 21.25 | 22.27 | 22.70 | 20.39          | 21.43 | 20.82 | 21.84 | 22.28 |
|                 | 6H   | 21.41            | 22.32 | 21.87 | 22.76 | 23.22 | 20.98          | 21.89 | 21.44 | 22.33 | 22.78 |
|                 | 8H   | 21.60            | 22.45 | 22.06 | 22.89 | 23.36 | 21.17          | 22.01 | 21.63 | 22.45 | 22.92 |
|                 | 12H  | 21.74            | 22.49 | 22.22 | 22.97 | 23.44 | 21.28          | 22.04 | 21.76 | 22.52 | 22.99 |
| 8H              | 4H   | 21.09            | 21.94 | 21.55 | 22.38 | 22.84 | 20.72          | 21.56 | 21.18 | 22.01 | 22.47 |
|                 | 6H   | 21.80            | 22.51 | 22.30 | 23.00 | 23.47 | 21.42          | 22.13 | 21.92 | 22.61 | 23.09 |
|                 | 8H   | 22.06            | 22.69 | 22.57 | 23.20 | 23.69 | 21.67          | 22.30 | 22.18 | 22.81 | 23.30 |
|                 | 12H  | 22.26            | 22.82 | 22.77 | 23.31 | 23.87 | 21.85          | 22.41 | 22.36 | 22.90 | 23.46 |
| 12H             | 4H   | 21.12            | 21.88 | 21.60 | 22.35 | 22.82 | 20.75          | 21.51 | 21.23 | 21.99 | 22.46 |
|                 | 6H   | 21.85            | 22.48 | 22.36 | 22.99 | 23.47 | 21.48          | 22.11 | 21.99 | 22.62 | 23.11 |
|                 | 8H   | 22.16            | 22.72 | 22.67 | 23.21 | 23.77 | 21.79          | 22.34 | 22.29 | 22.83 | 23.40 |