

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: P931136

Luminaire Tested: DFN2DS-SQ4F0-090DS950-RLL

Issue Date: 11/20/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P931136  
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-SQ4F0-090DS950-RLL  
Description: 4 foot, Square Define Geo, with Direct 1in Regressed Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

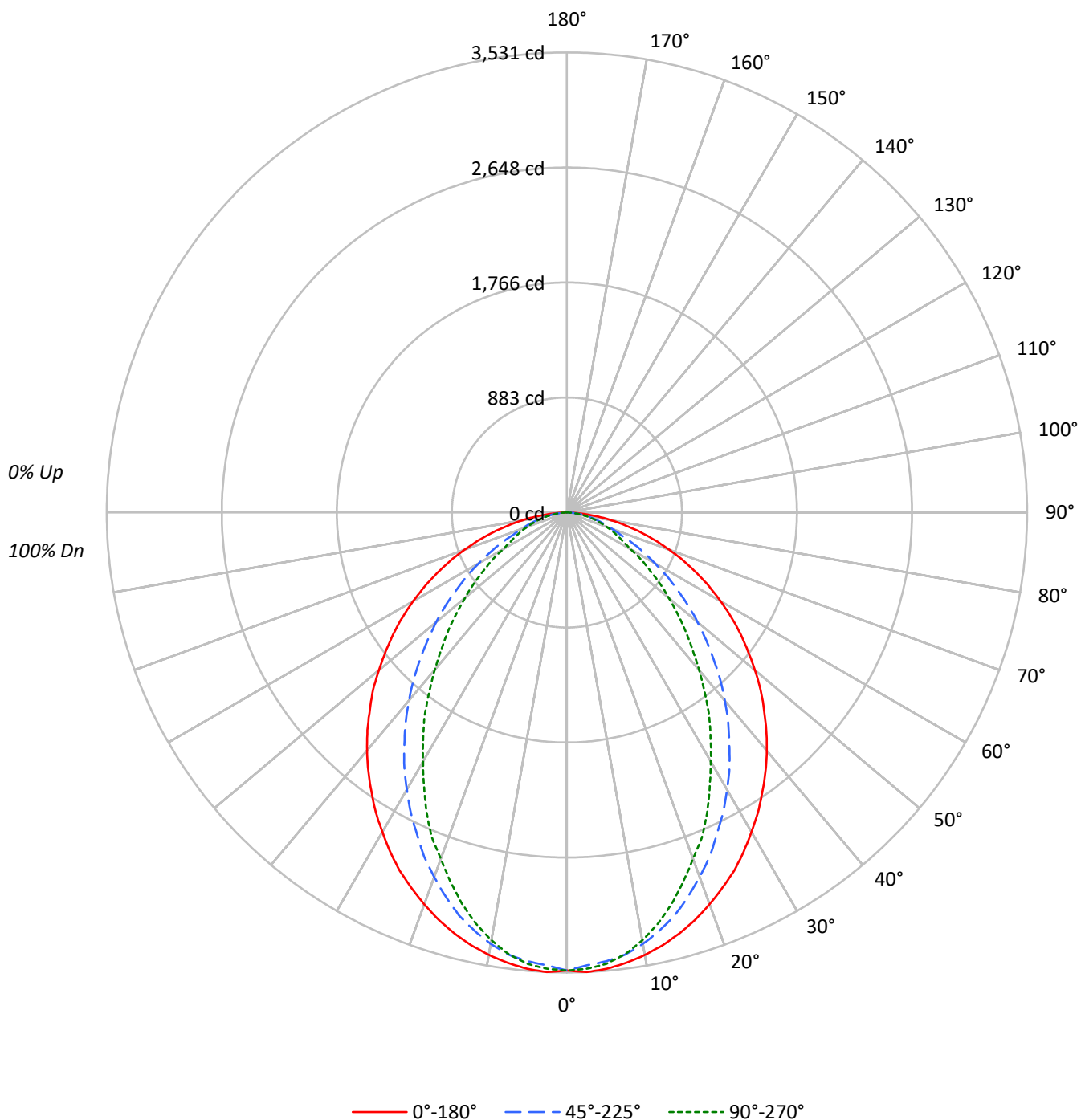
Lumens per Lamp: N/A  
Luminaire Lumens: 7229.2 lumens  
Efficiency: N/A  
Efficacy: 79.8 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular (W 3.92' x L: 3.92' x H: 0')  
CIE Type: Direct

Input Watts (W): 90.6  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.983  
Total Harmonic Distortion (THDi): 0.073  
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°  | 2466 | 2466 | 2466 |
| 5°  | 2476 | 2436 | 2449 |
| 10° | 2457 | 2396 | 2375 |
| 15° | 2429 | 2325 | 2258 |
| 20° | 2390 | 2223 | 2112 |
| 25° | 2350 | 2108 | 1970 |
| 30° | 2294 | 1990 | 1789 |
| 35° | 2240 | 1861 | 1629 |
| 40° | 2185 | 1728 | 1445 |
| 45° | 2121 | 1578 | 1278 |
| 50° | 2056 | 1427 | 1115 |
| 55° | 1988 | 1265 | 957  |
| 60° | 1911 | 1094 | 795  |
| 65° | 1822 | 919  | 723  |
| 70° | 1717 | 757  | 665  |
| 75° | 1587 | 690  | 621  |
| 80° | 1401 | 616  | 566  |
| 85° | 1100 | 486  | 486  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 2121 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 329.4  | 4.6       |
| 10°-20°   | 904.4  | 12.5      |
| 20°-30°   | 1269.7 | 17.6      |
| 30°-40°   | 1384.1 | 19.1      |
| 40°-50°   | 1272.1 | 17.6      |
| 50°-60°   | 999.0  | 13.8      |
| 60°-70°   | 650.3  | 9.0       |
| 70°-80°   | 334.7  | 4.6       |
| 80°-90°   | 85.5   | 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°    | 2503.5 | 34.6      |
| 0°-40°    | 3887.6 | 53.8      |
| 0°-60°    | 6158.8 | 85.2      |
| 0°-90°    | 7229.2 | 100.0     |
| 90°-120°  | 0.0    | 0.0       |
| 90°-150°  | 0.0    | 0.0       |
| 90°-180°  | 0.0    | 0.0       |
| 0°-180°   | 7229.2 | 100.0     |

**CANDELA DISTRIBUTION:**

|     | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|-----|------|-------|------|-------|------|------|
| 0°  | 3515 | 3515  | 3515 | 3515  | 3515 |      |
| 5°  | 3515 | 3499  | 3458 | 3486  | 3477 | 333  |
| 15° | 3343 | 3308  | 3200 | 3140  | 3108 | 942  |
| 25° | 3035 | 2933  | 2723 | 2593  | 2545 | 1396 |
| 35° | 2615 | 2453  | 2173 | 1972  | 1902 | 1637 |
| 45° | 2138 | 1924  | 1591 | 1364  | 1288 | 1651 |
| 55° | 1625 | 1377  | 1034 | 843   | 783  | 1452 |
| 65° | 1098 | 840   | 554  | 446   | 436  | 1088 |
| 75° | 585  | 362   | 254  | 232   | 229  | 619  |
| 85° | 137  | 70    | 60   | 60    | 60   | 164  |
| 90° | 0    | 0     | 0    | 0     | 0    |      |

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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|-------|--------|--------|--------|--------|--------|
| 0°    | 3515.1 | 3515.1 | 3515.1 | 3515.1 | 3515.1 |
| 2.5°  | 3531.0 | 3515.1 | 3480.0 | 3512.1 | 3505.7 |
| 5°    | 3515.1 | 3499.2 | 3457.8 | 3486.4 | 3476.9 |
| 7.5°  | 3486.4 | 3467.5 | 3423.0 | 3435.5 | 3419.6 |
| 10°   | 3448.3 | 3426.0 | 3362.6 | 3352.8 | 3333.9 |
| 12.5° | 3400.7 | 3372.0 | 3286.0 | 3267.1 | 3231.9 |
| 15°   | 3343.3 | 3308.3 | 3200.2 | 3139.8 | 3108.1 |
| 17.5° | 3276.5 | 3225.6 | 3091.9 | 3022.0 | 2971.1 |
| 20°   | 3200.2 | 3136.5 | 2977.4 | 2898.1 | 2827.9 |
| 22.5° | 3117.6 | 3044.3 | 2859.7 | 2751.7 | 2704.1 |
| 25°   | 3034.9 | 2932.9 | 2723.0 | 2592.7 | 2544.8 |
| 27.5° | 2936.3 | 2827.9 | 2595.7 | 2446.2 | 2373.0 |
| 30°   | 2831.3 | 2710.2 | 2455.7 | 2293.7 | 2207.6 |
| 32.5° | 2729.3 | 2582.9 | 2322.3 | 2131.4 | 2051.7 |
| 35°   | 2615.0 | 2452.7 | 2172.8 | 1972.4 | 1902.2 |
| 37.5° | 2503.6 | 2328.5 | 2032.8 | 1813.1 | 1733.8 |
| 40°   | 2385.8 | 2195.1 | 1886.3 | 1660.6 | 1577.9 |
| 42.5° | 2265.0 | 2061.5 | 1740.1 | 1504.6 | 1425.2 |
| 45°   | 2137.8 | 1924.5 | 1590.6 | 1364.5 | 1288.2 |
| 47.5° | 2016.9 | 1791.2 | 1447.6 | 1221.4 | 1151.6 |
| 50°   | 1883.3 | 1657.4 | 1307.5 | 1087.8 | 1021.3 |
| 52.5° | 1752.7 | 1514.1 | 1173.9 | 963.9  | 903.5  |
| 55°   | 1625.4 | 1377.3 | 1033.7 | 843.1  | 782.6  |
| 57.5° | 1495.2 | 1240.7 | 909.9  | 731.7  | 680.8  |
| 60°   | 1361.5 | 1107.0 | 779.3  | 617.3  | 566.3  |
| 62.5° | 1231.2 | 976.8  | 667.9  | 515.4  | 490.1  |
| 65°   | 1097.5 | 839.7  | 553.5  | 445.5  | 435.7  |
| 67.5° | 970.3  | 712.4  | 445.5  | 391.1  | 381.7  |
| 70°   | 836.7  | 588.6  | 368.9  | 337.2  | 324.3  |
| 72.5° | 709.4  | 473.8  | 308.4  | 283.1  | 276.8  |
| 75°   | 585.2  | 362.5  | 254.5  | 232.2  | 229.2  |
| 77.5° | 461.3  | 257.5  | 200.4  | 187.7  | 181.3  |
| 80°   | 346.6  | 184.7  | 152.5  | 140.0  | 140.0  |
| 82.5° | 241.6  | 124.2  | 105.0  | 98.6   | 98.6   |
| 85°   | 136.6  | 69.8   | 60.4   | 60.4   | 60.4   |
| 87.5° | 50.9   | 25.3   | 25.3   | 22.3   | 22.3   |
| 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 | 14.37            | 15.89 | 14.74 | 16.21 | 16.52 | 10.33          | 11.85 | 10.70 | 12.17 | 12.48 |
|                 | 3H   | 16.14            | 17.50 | 16.51 | 17.83 | 18.19 | 11.60          | 12.96 | 11.97 | 13.29 | 13.65 |
|                 | 4H   | 16.80            | 18.08 | 17.20 | 18.43 | 18.81 | 12.10          | 13.38 | 12.50 | 13.73 | 14.11 |
|                 | 6H   | 17.29            | 18.47 | 17.70 | 18.84 | 19.23 | 12.48          | 13.66 | 12.89 | 14.03 | 14.42 |
|                 | 8H   | 17.46            | 18.58 | 17.88 | 18.97 | 19.37 | 12.60          | 13.73 | 13.03 | 14.12 | 14.52 |
|                 | 12H  | 17.56            | 18.64 | 17.99 | 19.02 | 19.45 | 12.69          | 13.76 | 13.12 | 14.15 | 14.57 |
| 4H              | 2H   | 14.48            | 15.76 | 14.88 | 16.10 | 16.48 | 11.03          | 12.31 | 11.43 | 12.66 | 13.04 |
|                 | 3H   | 16.41            | 17.47 | 16.82 | 17.87 | 18.27 | 12.47          | 13.53 | 12.88 | 13.93 | 14.33 |
|                 | 4H   | 17.16            | 18.11 | 17.59 | 18.53 | 18.97 | 13.07          | 14.03 | 13.50 | 14.44 | 14.88 |
|                 | 6H   | 17.75            | 18.58 | 18.21 | 19.02 | 19.48 | 13.56          | 14.39 | 14.02 | 14.83 | 15.29 |
|                 | 8H   | 17.96            | 18.74 | 18.43 | 19.19 | 19.65 | 13.72          | 14.50 | 14.18 | 14.94 | 15.41 |
|                 | 12H  | 18.12            | 18.81 | 18.60 | 19.29 | 19.76 | 13.84          | 14.53 | 14.32 | 15.01 | 15.48 |
| 8H              | 4H   | 17.18            | 17.96 | 17.65 | 18.40 | 18.87 | 13.42          | 14.20 | 13.89 | 14.65 | 15.11 |
|                 | 6H   | 17.82            | 18.46 | 18.32 | 18.95 | 19.43 | 14.01          | 14.65 | 14.51 | 15.14 | 15.62 |
|                 | 8H   | 18.07            | 18.65 | 18.58 | 19.16 | 19.64 | 14.23          | 14.81 | 14.75 | 15.32 | 15.81 |
|                 | 12H  | 18.27            | 18.78 | 18.78 | 19.28 | 19.84 | 14.41          | 14.92 | 14.92 | 15.41 | 15.98 |
| 12H             | 4H   | 17.17            | 17.86 | 17.65 | 18.34 | 18.81 | 13.47          | 14.16 | 13.95 | 14.64 | 15.11 |
|                 | 6H   | 17.80            | 18.38 | 18.31 | 18.89 | 19.38 | 14.07          | 14.65 | 14.59 | 15.16 | 15.65 |
|                 | 8H   | 18.08            | 18.59 | 18.59 | 19.09 | 19.65 | 14.35          | 14.86 | 14.86 | 15.35 | 15.91 |