

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: P930632

Luminaire Tested: DFN2DS-PN3F0-090DS950-RLL

Issue Date: 11/20/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P930632  
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-PN3F0-090DS950-RLL  
Description: 3 foot, Pentagon Define Geo, with Direct 1in Regressed Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

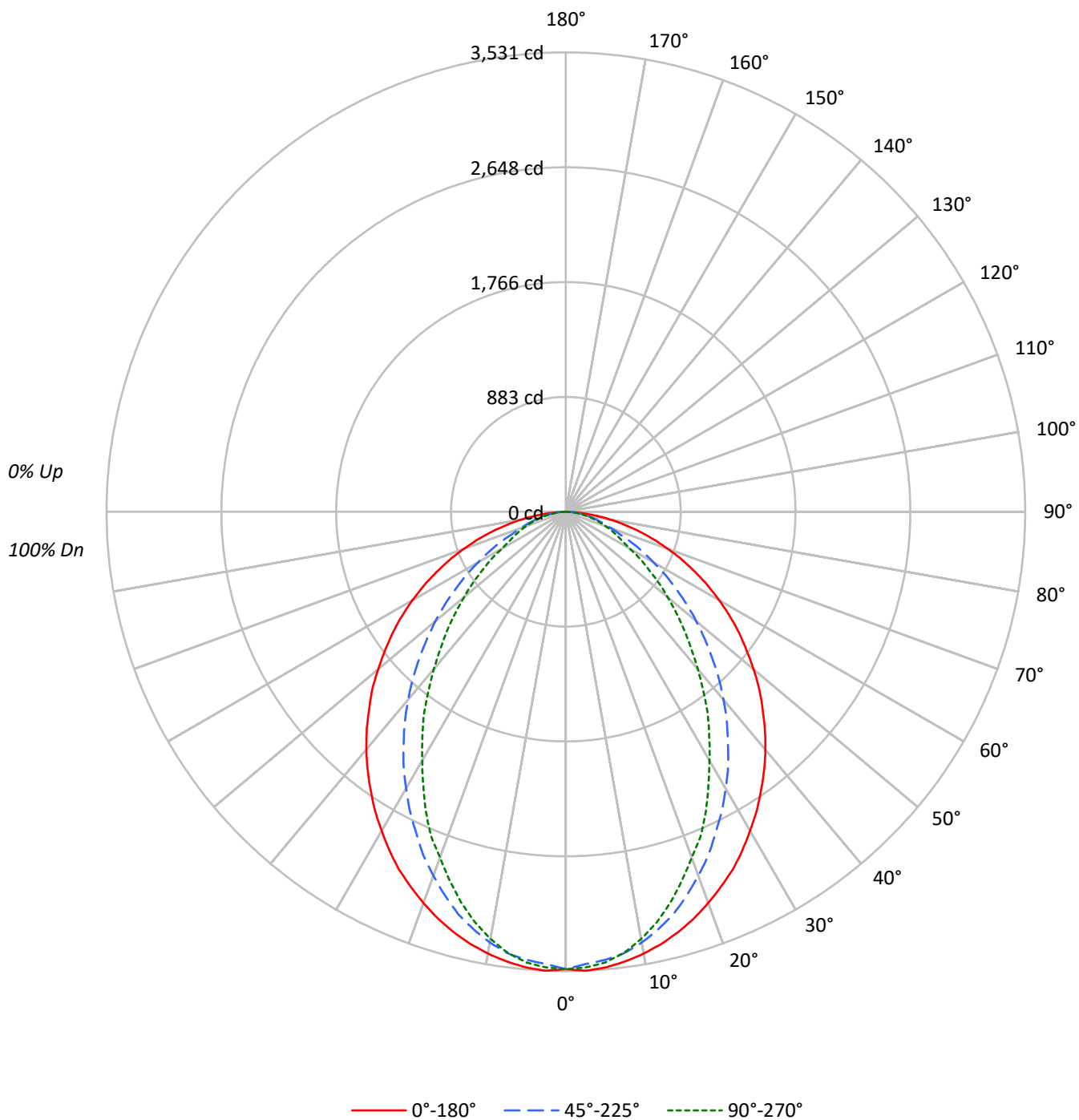
Lumens per Lamp: N/A  
Luminaire Lumens: 7229.2 lumens  
Efficiency: N/A  
Efficacy: 74.4 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular (W 3.11' x L: 2.96' x H: 0')  
CIE Type: Direct

Input Watts (W): 97.2  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9954  
Total Harmonic Distortion (THDi): 0.076  
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°  | 4109 | 4109 | 4109 |
| 5°  | 4125 | 4058 | 4080 |
| 10° | 4093 | 3991 | 3957 |
| 15° | 4046 | 3873 | 3761 |
| 20° | 3981 | 3704 | 3518 |
| 25° | 3915 | 3512 | 3282 |
| 30° | 3822 | 3315 | 2980 |
| 35° | 3732 | 3101 | 2715 |
| 40° | 3641 | 2878 | 2408 |
| 45° | 3534 | 2630 | 2130 |
| 50° | 3425 | 2378 | 1857 |
| 55° | 3313 | 2107 | 1595 |
| 60° | 3183 | 1822 | 1324 |
| 65° | 3036 | 1531 | 1205 |
| 70° | 2860 | 1261 | 1108 |
| 75° | 2643 | 1149 | 1035 |
| 80° | 2333 | 1027 | 942  |
| 85° | 1832 | 810  | 810  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
Vertical Angle: 45°  
Luminance: 3534 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 | 16.14            | 17.67 | 16.51 | 17.98 | 18.29 | 12.11          | 13.63 | 12.47 | 13.94 | 14.26 |
|                 | 3H   | 17.91            | 19.28 | 18.29 | 19.60 | 19.96 | 13.37          | 14.74 | 13.75 | 15.06 | 15.43 |
|                 | 4H   | 18.58            | 19.86 | 18.98 | 20.21 | 20.58 | 13.87          | 15.15 | 14.27 | 15.50 | 15.88 |
|                 | 6H   | 19.07            | 20.25 | 19.48 | 20.61 | 21.01 | 14.25          | 15.44 | 14.67 | 15.80 | 16.19 |
|                 | 8H   | 19.23            | 20.36 | 19.66 | 20.75 | 21.15 | 14.38          | 15.50 | 14.80 | 15.89 | 16.29 |
|                 | 12H  | 19.33            | 20.41 | 19.76 | 20.79 | 21.22 | 14.46          | 15.54 | 14.89 | 15.92 | 16.35 |
| 4H              | 2H   | 16.25            | 17.53 | 16.65 | 17.88 | 18.26 | 12.80          | 14.08 | 13.20 | 14.43 | 14.81 |
|                 | 3H   | 18.18            | 19.24 | 18.59 | 19.64 | 20.05 | 14.24          | 15.31 | 14.65 | 15.71 | 16.11 |
|                 | 4H   | 18.93            | 19.89 | 19.36 | 20.30 | 20.74 | 14.84          | 15.80 | 15.28 | 16.22 | 16.65 |
|                 | 6H   | 19.52            | 20.36 | 19.98 | 20.80 | 21.26 | 15.33          | 16.16 | 15.79 | 16.61 | 17.07 |
|                 | 8H   | 19.74            | 20.51 | 20.20 | 20.96 | 21.43 | 15.49          | 16.27 | 15.96 | 16.71 | 17.18 |
|                 | 12H  | 19.89            | 20.59 | 20.37 | 21.06 | 21.53 | 15.61          | 16.31 | 16.09 | 16.78 | 17.25 |
| 8H              | 4H   | 18.96            | 19.73 | 19.42 | 20.18 | 20.64 | 15.20          | 15.97 | 15.66 | 16.42 | 16.89 |
|                 | 6H   | 19.59            | 20.24 | 20.09 | 20.73 | 21.20 | 15.78          | 16.43 | 16.28 | 16.92 | 17.39 |
|                 | 8H   | 19.84            | 20.42 | 20.36 | 20.93 | 21.42 | 16.00          | 16.58 | 16.52 | 17.09 | 17.58 |
|                 | 12H  | 20.05            | 20.56 | 20.56 | 21.05 | 21.61 | 16.18          | 16.69 | 16.69 | 17.19 | 17.75 |
| 12H             | 4H   | 18.94            | 19.63 | 19.42 | 20.11 | 20.58 | 15.24          | 15.93 | 15.72 | 16.41 | 16.88 |
|                 | 6H   | 19.57            | 20.15 | 20.09 | 20.66 | 21.15 | 15.85          | 16.42 | 16.36 | 16.93 | 17.42 |
|                 | 8H   | 19.86            | 20.37 | 20.37 | 20.86 | 21.42 | 16.12          | 16.63 | 16.63 | 17.12 | 17.69 |