

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: P930738

Luminaire Tested: DFN2DS-PN4F0-090DS940-RLL

Issue Date: 11/20/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P930738  
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-PN4F0-090DS940-RLL  
Description: 4 foot, Pentagon Define Geo, with Direct 1in Regressed Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

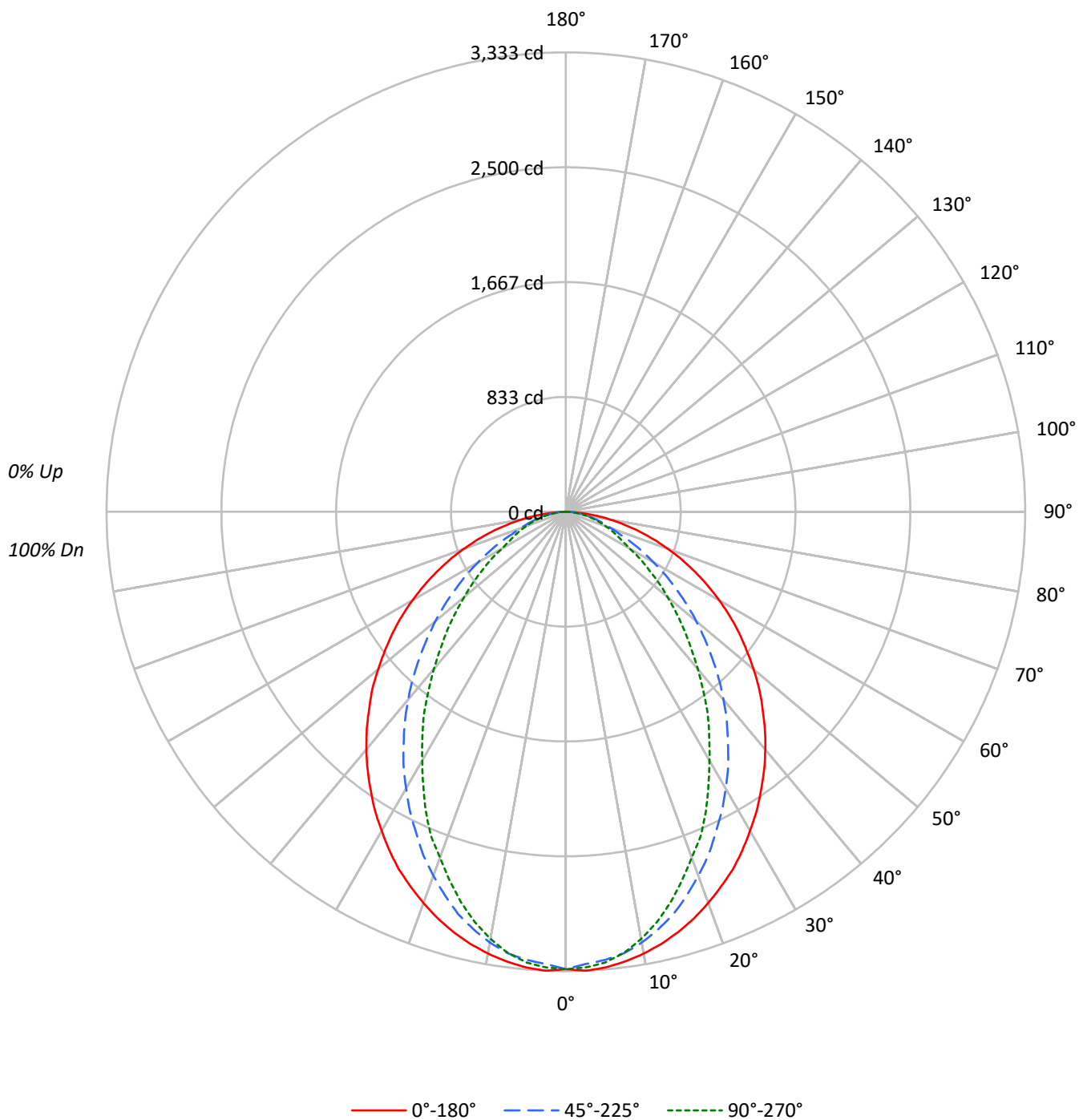
Lumens per Lamp: N/A  
Luminaire Lumens: 6823.8 lumens  
Efficiency: N/A  
Efficacy: 73.3 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular (W 3.94' x L: 3.74' x H: 0')  
CIE Type: Direct

Input Watts (W): 93.1  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9963  
Total Harmonic Distortion (THDi): 0.065  
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°  | 2422 | 2422 | 2422 |
| 5°  | 2431 | 2392 | 2405 |
| 10° | 2413 | 2353 | 2333 |
| 15° | 2385 | 2283 | 2217 |
| 20° | 2347 | 2183 | 2074 |
| 25° | 2307 | 2070 | 1935 |
| 30° | 2253 | 1954 | 1756 |
| 35° | 2200 | 1828 | 1600 |
| 40° | 2146 | 1697 | 1419 |
| 45° | 2083 | 1550 | 1255 |
| 50° | 2019 | 1402 | 1095 |
| 55° | 1952 | 1242 | 940  |
| 60° | 1876 | 1074 | 780  |
| 65° | 1789 | 902  | 710  |
| 70° | 1686 | 743  | 653  |
| 75° | 1558 | 677  | 610  |
| 80° | 1375 | 605  | 556  |
| 85° | 1080 | 477  | 477  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 2083 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 311.0  | 4.6       |
| 10°-20°   | 853.7  | 12.5      |
| 20°-30°   | 1198.5 | 17.6      |
| 30°-40°   | 1306.5 | 19.1      |
| 40°-50°   | 1200.8 | 17.6      |
| 50°-60°   | 943.0  | 13.8      |
| 60°-70°   | 613.8  | 9.0       |
| 70°-80°   | 316.0  | 4.6       |
| 80°-90°   | 80.7   | 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°    | 2363.1 | 34.6      |
| 0°-40°    | 3669.6 | 53.8      |
| 0°-60°    | 5813.4 | 85.2      |
| 0°-90°    | 6823.8 | 100.0     |
| 90°-120°  | 0.0    | 0.0       |
| 90°-150°  | 0.0    | 0.0       |
| 90°-180°  | 0.0    | 0.0       |
| 0°-180°   | 6823.8 | 100.0     |

**CANDELA DISTRIBUTION:**

|     | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|-----|------|-------|------|-------|------|------|
| 0°  | 3318 | 3318  | 3318 | 3318  | 3318 |      |
| 5°  | 3318 | 3303  | 3264 | 3291  | 3282 | 315  |
| 15° | 3156 | 3123  | 3021 | 2964  | 2934 | 889  |
| 25° | 2865 | 2768  | 2570 | 2447  | 2402 | 1317 |
| 35° | 2468 | 2315  | 2051 | 1862  | 1796 | 1545 |
| 45° | 2018 | 1817  | 1501 | 1288  | 1216 | 1558 |
| 55° | 1534 | 1300  | 976  | 796   | 739  | 1371 |
| 65° | 1036 | 793   | 522  | 420   | 411  | 1027 |
| 75° | 552  | 342   | 240  | 219   | 216  | 584  |
| 85° | 129  | 66    | 57   | 57    | 57   | 155  |
| 90° | 0    | 0     | 0    | 0     | 0    |      |

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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|-------|--------|--------|--------|--------|--------|
| 0°    | 3318.0 | 3318.0 | 3318.0 | 3318.0 | 3318.0 |
| 2.5°  | 3333.0 | 3318.0 | 3284.8 | 3315.1 | 3309.1 |
| 5°    | 3318.0 | 3303.0 | 3263.8 | 3290.9 | 3281.9 |
| 7.5°  | 3290.9 | 3273.0 | 3231.0 | 3242.8 | 3227.8 |
| 10°   | 3254.9 | 3233.9 | 3174.0 | 3164.7 | 3146.9 |
| 12.5° | 3210.0 | 3182.9 | 3101.7 | 3083.8 | 3050.6 |
| 15°   | 3155.8 | 3122.7 | 3020.8 | 2963.7 | 2933.8 |
| 17.5° | 3092.7 | 3044.7 | 2918.4 | 2852.5 | 2804.4 |
| 20°   | 3020.8 | 2960.5 | 2810.4 | 2735.6 | 2669.3 |
| 22.5° | 2942.7 | 2873.6 | 2699.3 | 2597.3 | 2552.5 |
| 25°   | 2864.7 | 2768.4 | 2570.3 | 2447.3 | 2402.1 |
| 27.5° | 2771.6 | 2669.3 | 2450.1 | 2309.0 | 2239.9 |
| 30°   | 2672.5 | 2558.2 | 2318.0 | 2165.1 | 2083.8 |
| 32.5° | 2576.3 | 2438.0 | 2192.1 | 2011.8 | 1936.6 |
| 35°   | 2468.3 | 2315.1 | 2051.0 | 1861.8 | 1795.5 |
| 37.5° | 2363.2 | 2197.9 | 1918.8 | 1711.4 | 1636.6 |
| 40°   | 2252.0 | 2072.0 | 1780.5 | 1567.4 | 1489.4 |
| 42.5° | 2137.9 | 1945.9 | 1642.5 | 1420.2 | 1345.3 |
| 45°   | 2017.9 | 1816.6 | 1501.4 | 1288.0 | 1216.0 |
| 47.5° | 1903.8 | 1690.7 | 1366.4 | 1152.9 | 1087.0 |
| 50°   | 1777.7 | 1564.5 | 1234.2 | 1026.8 | 964.0  |
| 52.5° | 1654.4 | 1429.2 | 1108.0 | 909.8  | 852.8  |
| 55°   | 1534.2 | 1300.1 | 975.8  | 795.8  | 738.8  |
| 57.5° | 1411.3 | 1171.1 | 858.9  | 690.7  | 642.6  |
| 60°   | 1285.1 | 1044.9 | 735.6  | 582.7  | 534.6  |
| 62.5° | 1162.2 | 922.0  | 630.5  | 486.5  | 462.6  |
| 65°   | 1036.0 | 792.6  | 522.4  | 420.5  | 411.3  |
| 67.5° | 915.9  | 672.5  | 420.5  | 369.2  | 360.3  |
| 70°   | 789.8  | 555.6  | 348.2  | 318.3  | 306.1  |
| 72.5° | 669.6  | 447.2  | 291.1  | 267.2  | 261.3  |
| 75°   | 552.4  | 342.2  | 240.2  | 219.2  | 216.3  |
| 77.5° | 435.5  | 243.1  | 189.2  | 177.2  | 171.1  |
| 80°   | 327.2  | 174.3  | 144.0  | 132.2  | 132.2  |
| 82.5° | 228.1  | 117.2  | 99.1   | 93.0   | 93.0   |
| 85°   | 129.0  | 65.9   | 57.0   | 57.0   | 57.0   |
| 87.5° | 48.1   | 23.9   | 23.9   | 21.1   | 21.1   |
| 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 | 14.31            | 15.83 | 14.67 | 16.14 | 16.46 | 10.27          | 11.79 | 10.63 | 12.10 | 12.42 |
|                 | 3H   | 16.07            | 17.44 | 16.45 | 17.77 | 18.13 | 11.53          | 12.90 | 11.91 | 13.23 | 13.59 |
|                 | 4H   | 16.74            | 18.02 | 17.14 | 18.37 | 18.75 | 12.04          | 13.32 | 12.44 | 13.66 | 14.04 |
|                 | 6H   | 17.23            | 18.41 | 17.64 | 18.78 | 19.17 | 12.42          | 13.60 | 12.83 | 13.97 | 14.36 |
|                 | 8H   | 17.39            | 18.52 | 17.82 | 18.91 | 19.31 | 12.54          | 13.67 | 12.97 | 14.06 | 14.46 |
|                 | 12H  | 17.50            | 18.58 | 17.93 | 18.96 | 19.39 | 12.62          | 13.70 | 13.05 | 14.08 | 14.51 |
| 4H              | 2H   | 14.41            | 15.69 | 14.81 | 16.04 | 16.42 | 10.96          | 12.24 | 11.36 | 12.59 | 12.97 |
|                 | 3H   | 16.35            | 17.41 | 16.76 | 17.81 | 18.21 | 12.41          | 13.47 | 12.82 | 13.87 | 14.27 |
|                 | 4H   | 17.09            | 18.05 | 17.53 | 18.47 | 18.91 | 13.01          | 13.96 | 13.44 | 14.38 | 14.82 |
|                 | 6H   | 17.69            | 18.52 | 18.14 | 18.96 | 19.42 | 13.50          | 14.33 | 13.95 | 14.77 | 15.23 |
|                 | 8H   | 17.90            | 18.68 | 18.36 | 19.12 | 19.59 | 13.66          | 14.43 | 14.12 | 14.88 | 15.35 |
|                 | 12H  | 18.05            | 18.75 | 18.54 | 19.23 | 19.70 | 13.77          | 14.47 | 14.26 | 14.95 | 15.42 |
| 8H              | 4H   | 17.12            | 17.90 | 17.58 | 18.34 | 18.81 | 13.36          | 14.14 | 13.82 | 14.58 | 15.05 |
|                 | 6H   | 17.76            | 18.40 | 18.25 | 18.89 | 19.37 | 13.95          | 14.59 | 14.44 | 15.08 | 15.56 |
|                 | 8H   | 18.01            | 18.58 | 18.52 | 19.09 | 19.58 | 14.17          | 14.74 | 14.68 | 15.25 | 15.74 |
|                 | 12H  | 18.21            | 18.72 | 18.72 | 19.21 | 19.78 | 14.35          | 14.86 | 14.86 | 15.35 | 15.91 |
| 12H             | 4H   | 17.10            | 17.80 | 17.59 | 18.28 | 18.75 | 13.40          | 14.10 | 13.89 | 14.58 | 15.05 |
|                 | 6H   | 17.74            | 18.31 | 18.25 | 18.82 | 19.31 | 14.01          | 14.59 | 14.52 | 15.10 | 15.59 |
|                 | 8H   | 18.02            | 18.53 | 18.53 | 19.02 | 19.59 | 14.28          | 14.79 | 14.79 | 15.29 | 15.85 |

END OF REPORT

FIELD PERFORMANCE MAY DIFFER FROM LABORATORY PERFORMANCE

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