

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: P931554

Luminaire Tested: DFN2DS-TR4F0-100DS835-RLL

Issue Date: 11/20/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P931554  
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-TR4F0-100DS835-RLL  
Description: 4 foot, Triangle Define Geo, with Direct 1in Regressed Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

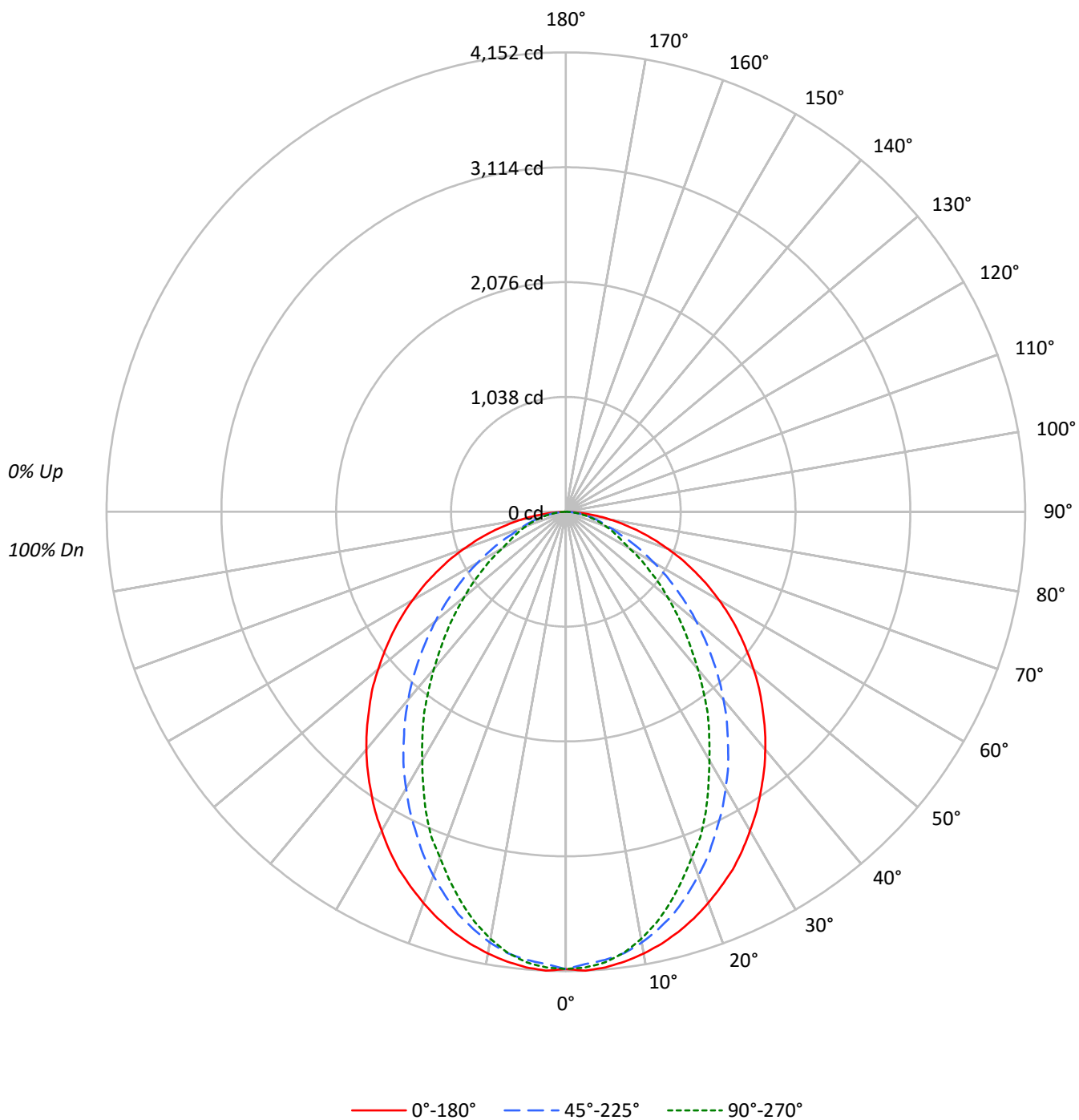
Lumens per Lamp: N/A  
Luminaire Lumens: 8500.0 lumens  
Efficiency: N/A  
Efficacy: 79.2 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular (W 3.96' x L: 3.43' x H: 0')  
CIE Type: Direct

Input Watts (W): 107.3  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9972  
Total Harmonic Distortion (THDi): 0.128  
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  |     |     | 0   |
| RW  | 70  | 50  | 30  | 10  | 70  | 50  | 30  | 10  | 50  | 30  | 10  |  | 50  | 30  | 10  |  | 50  | 30  | 10  | 0   |
| RCR |     |     |     |     |     |     |     |     |     |     |     |  |     |     |     |  |     |     |     |     |
| 0   | 119 | 119 | 119 | 119 | 116 | 116 | 116 | 116 | 111 | 111 | 111 |  | 106 | 106 | 106 |  | 102 | 102 | 102 | 100 |
| 1   | 110 | 106 | 102 | 98  | 107 | 103 | 100 | 97  | 99  | 96  | 94  |  | 95  | 93  | 91  |  | 92  | 90  | 88  | 86  |
| 2   | 101 | 94  | 87  | 82  | 98  | 92  | 86  | 81  | 88  | 83  | 79  |  | 85  | 81  | 78  |  | 82  | 79  | 76  | 74  |
| 3   | 93  | 83  | 76  | 70  | 90  | 82  | 75  | 69  | 79  | 73  | 68  |  | 76  | 71  | 67  |  | 74  | 69  | 66  | 64  |
| 4   | 86  | 75  | 66  | 60  | 83  | 73  | 66  | 60  | 71  | 64  | 59  |  | 69  | 63  | 58  |  | 66  | 62  | 57  | 55  |
| 5   | 79  | 67  | 59  | 53  | 77  | 66  | 58  | 52  | 64  | 57  | 52  |  | 62  | 56  | 51  |  | 60  | 55  | 51  | 49  |
| 6   | 74  | 61  | 53  | 47  | 72  | 60  | 52  | 46  | 58  | 51  | 46  |  | 57  | 50  | 46  |  | 55  | 50  | 45  | 43  |
| 7   | 68  | 56  | 47  | 42  | 67  | 55  | 47  | 42  | 53  | 46  | 41  |  | 52  | 46  | 41  |  | 51  | 45  | 41  | 39  |
| 8   | 64  | 51  | 43  | 38  | 62  | 51  | 43  | 37  | 49  | 42  | 37  |  | 48  | 42  | 37  |  | 47  | 41  | 37  | 35  |
| 9   | 60  | 47  | 39  | 34  | 59  | 47  | 39  | 34  | 46  | 39  | 34  |  | 44  | 38  | 34  |  | 44  | 38  | 34  | 32  |
| 10  | 56  | 44  | 36  | 31  | 55  | 43  | 36  | 31  | 42  | 36  | 31  |  | 41  | 35  | 31  |  | 41  | 35  | 31  | 29  |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 3283 | 3283 | 3283 |
| 5°  | 3296 | 3242 | 3260 |
| 10° | 3271 | 3189 | 3162 |
| 15° | 3233 | 3095 | 3006 |
| 20° | 3181 | 2960 | 2811 |
| 25° | 3128 | 2806 | 2623 |
| 30° | 3054 | 2649 | 2381 |
| 35° | 2982 | 2478 | 2169 |
| 40° | 2909 | 2300 | 1924 |
| 45° | 2824 | 2101 | 1702 |
| 50° | 2737 | 1900 | 1484 |
| 55° | 2647 | 1684 | 1275 |
| 60° | 2543 | 1456 | 1058 |
| 65° | 2426 | 1223 | 963  |
| 70° | 2285 | 1007 | 886  |
| 75° | 2112 | 918  | 827  |
| 80° | 1864 | 821  | 753  |
| 85° | 1465 | 647  | 647  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 2824 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 387.3  | 4.6       |
| 10°-20°   | 1063.3 | 12.5      |
| 20°-30°   | 1492.9 | 17.6      |
| 30°-40°   | 1627.4 | 19.1      |
| 40°-50°   | 1495.7 | 17.6      |
| 50°-60°   | 1174.7 | 13.8      |
| 60°-70°   | 764.6  | 9.0       |
| 70°-80°   | 393.6  | 4.6       |
| 80°-90°   | 100.5  | 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°    | 2943.6 | 34.6      |
| 0°-40°    | 4571.0 | 53.8      |
| 0°-60°    | 7241.3 | 85.2      |
| 0°-90°    | 8500.0 | 100.0     |
| 90°-120°  | 0.0    | 0.0       |
| 90°-150°  | 0.0    | 0.0       |
| 90°-180°  | 0.0    | 0.0       |
| 0°-180°   | 8500.0 | 100.0     |

**CANDELA DISTRIBUTION:**

|     | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|-----|------|-------|------|-------|------|------|
| 0°  | 4133 | 4133  | 4133 | 4133  | 4133 |      |
| 5°  | 4133 | 4114  | 4066 | 4099  | 4088 | 392  |
| 15° | 3931 | 3890  | 3763 | 3692  | 3654 | 1108 |
| 25° | 3568 | 3448  | 3202 | 3048  | 2992 | 1641 |
| 35° | 3075 | 2884  | 2555 | 2319  | 2236 | 1924 |
| 45° | 2514 | 2263  | 1870 | 1604  | 1515 | 1941 |
| 55° | 1911 | 1620  | 1216 | 991   | 920  | 1708 |
| 65° | 1290 | 987   | 651  | 524   | 512  | 1279 |
| 75° | 688  | 426   | 299  | 273   | 269  | 728  |
| 85° | 161  | 82    | 71   | 71    | 71   | 193  |
| 90° | 0    | 0     | 0    | 0     | 0    |      |

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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|-------|--------|--------|--------|--------|--------|
| 0°    | 4133.0 | 4133.0 | 4133.0 | 4133.0 | 4133.0 |
| 2.5°  | 4151.6 | 4133.0 | 4091.7 | 4129.4 | 4121.9 |
| 5°    | 4133.0 | 4114.3 | 4065.5 | 4099.3 | 4088.1 |
| 7.5°  | 4099.3 | 4077.0 | 4024.6 | 4039.3 | 4020.7 |
| 10°   | 4054.4 | 4028.2 | 3953.6 | 3942.1 | 3919.9 |
| 12.5° | 3998.5 | 3964.7 | 3863.5 | 3841.3 | 3800.0 |
| 15°   | 3931.0 | 3889.7 | 3762.7 | 3691.7 | 3654.4 |
| 17.5° | 3852.4 | 3792.5 | 3635.4 | 3553.2 | 3493.3 |
| 20°   | 3762.7 | 3687.7 | 3500.8 | 3407.6 | 3325.0 |
| 22.5° | 3665.5 | 3579.4 | 3362.3 | 3235.4 | 3179.4 |
| 25°   | 3568.3 | 3448.5 | 3201.6 | 3048.4 | 2992.1 |
| 27.5° | 3452.4 | 3325.0 | 3052.0 | 2876.2 | 2790.1 |
| 30°   | 3329.0 | 3186.5 | 2887.3 | 2696.9 | 2595.7 |
| 32.5° | 3209.2 | 3036.9 | 2730.6 | 2506.0 | 2412.3 |
| 35°   | 3074.6 | 2883.8 | 2554.8 | 2319.1 | 2236.5 |
| 37.5° | 2943.7 | 2737.7 | 2390.1 | 2131.8 | 2038.5 |
| 40°   | 2805.2 | 2581.0 | 2217.9 | 1952.4 | 1855.2 |
| 42.5° | 2663.1 | 2423.8 | 2046.1 | 1769.1 | 1675.8 |
| 45°   | 2513.5 | 2262.7 | 1870.3 | 1604.4 | 1514.7 |
| 47.5° | 2371.5 | 2106.0 | 1702.0 | 1436.1 | 1354.0 |
| 50°   | 2214.3 | 1948.8 | 1537.3 | 1279.0 | 1200.8 |
| 52.5° | 2060.7 | 1780.2 | 1380.2 | 1133.3 | 1062.3 |
| 55°   | 1911.1 | 1619.5 | 1215.5 | 991.3  | 920.2  |
| 57.5° | 1758.0 | 1458.7 | 1069.9 | 860.3  | 800.4  |
| 60°   | 1600.8 | 1301.6 | 916.3  | 725.8  | 665.9  |
| 62.5° | 1447.6 | 1148.4 | 785.3  | 606.0  | 576.2  |
| 65°   | 1290.5 | 987.3  | 650.8  | 523.8  | 512.3  |
| 67.5° | 1140.9 | 837.7  | 523.8  | 459.9  | 448.8  |
| 70°   | 983.7  | 692.1  | 433.7  | 396.4  | 381.4  |
| 72.5° | 834.1  | 557.1  | 362.7  | 332.9  | 325.4  |
| 75°   | 688.1  | 426.2  | 299.2  | 273.0  | 269.4  |
| 77.5° | 542.5  | 302.8  | 235.7  | 220.6  | 213.1  |
| 80°   | 407.5  | 217.1  | 179.4  | 164.7  | 164.7  |
| 82.5° | 284.1  | 146.0  | 123.4  | 115.9  | 115.9  |
| 85°   | 160.7  | 82.1   | 71.0   | 71.0   | 71.0   |
| 87.5° | 59.9   | 29.8   | 29.8   | 26.2   | 26.2   |
| 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 | 15.37            | 16.89 | 15.73 | 17.20 | 17.51 | 11.33          | 12.85 | 11.69 | 13.16 | 13.48 |
|                 | 3H   | 17.13            | 18.50 | 17.51 | 18.82 | 19.19 | 12.59          | 13.96 | 12.97 | 14.28 | 14.65 |
|                 | 4H   | 17.80            | 19.08 | 18.20 | 19.43 | 19.80 | 13.09          | 14.37 | 13.49 | 14.72 | 15.10 |
|                 | 6H   | 18.29            | 19.47 | 18.70 | 19.84 | 20.23 | 13.47          | 14.66 | 13.89 | 15.02 | 15.41 |
|                 | 8H   | 18.45            | 19.58 | 18.88 | 19.97 | 20.37 | 13.60          | 14.72 | 14.02 | 15.11 | 15.52 |
|                 | 12H  | 18.55            | 19.63 | 18.98 | 20.01 | 20.44 | 13.68          | 14.76 | 14.11 | 15.14 | 15.57 |
| 4H              | 2H   | 15.47            | 16.75 | 15.87 | 17.10 | 17.48 | 12.02          | 13.30 | 12.42 | 13.65 | 14.03 |
|                 | 3H   | 17.40            | 18.47 | 17.81 | 18.87 | 19.27 | 13.46          | 14.53 | 13.87 | 14.93 | 15.33 |
|                 | 4H   | 18.15            | 19.11 | 18.58 | 19.52 | 19.96 | 14.06          | 15.02 | 14.50 | 15.44 | 15.87 |
|                 | 6H   | 18.74            | 19.58 | 19.20 | 20.02 | 20.48 | 14.55          | 15.38 | 15.01 | 15.83 | 16.29 |
|                 | 8H   | 18.96            | 19.74 | 19.42 | 20.18 | 20.65 | 14.71          | 15.49 | 15.18 | 15.94 | 16.40 |
|                 | 12H  | 19.11            | 19.81 | 19.59 | 20.28 | 20.76 | 14.83          | 15.53 | 15.31 | 16.00 | 16.47 |
| 8H              | 4H   | 18.18            | 18.95 | 18.64 | 19.40 | 19.86 | 14.42          | 15.19 | 14.88 | 15.64 | 16.11 |
|                 | 6H   | 18.81            | 19.46 | 19.31 | 19.95 | 20.42 | 15.00          | 15.65 | 15.50 | 16.14 | 16.62 |
|                 | 8H   | 19.06            | 19.64 | 19.58 | 20.15 | 20.64 | 15.23          | 15.80 | 15.74 | 16.31 | 16.80 |
|                 | 12H  | 19.27            | 19.78 | 19.78 | 20.27 | 20.83 | 15.40          | 15.91 | 15.91 | 16.41 | 16.97 |
| 12H             | 4H   | 18.16            | 18.86 | 18.64 | 19.33 | 19.80 | 14.46          | 15.16 | 14.94 | 15.63 | 16.10 |
|                 | 6H   | 18.79            | 19.37 | 19.31 | 19.88 | 20.37 | 15.07          | 15.65 | 15.58 | 16.15 | 16.64 |
|                 | 8H   | 19.08            | 19.59 | 19.59 | 20.08 | 20.65 | 15.34          | 15.85 | 15.85 | 16.34 | 16.91 |

END OF REPORT

FIELD PERFORMANCE MAY DIFFER FROM LABORATORY PERFORMANCE

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