

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: P931427

Luminaire Tested: DFN2DS-TR3F0-090DS835-FLL

Issue Date: 11/20/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P931427  
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-TR3F0-090DS835-FLL  
Description: 3 foot, Triangle Define Geo, with Direct Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

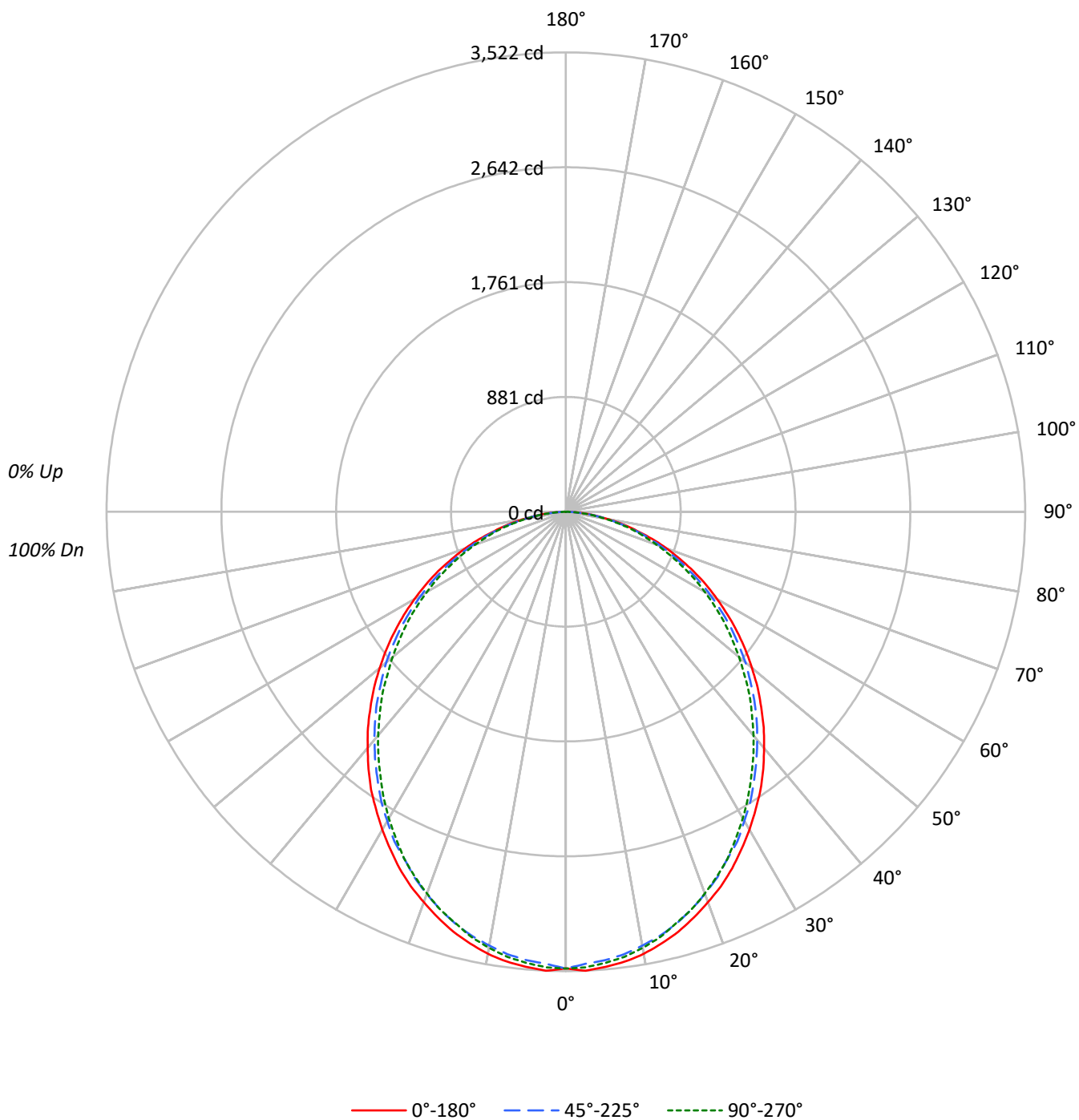
Lumens per Lamp: N/A  
Luminaire Lumens: 8910.0 lumens  
Efficiency: N/A  
Efficacy: 89.9 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
Luminous Opening: Rectangular (W 3.16' x L: 2.74' x H: 0')  
CIE Type: Direct

Input Watts (W): 99.1  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9951  
Total Harmonic Distortion (THDi): 0.07  
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°  | 4364 | 4364 | 4364 |
| 5°  | 4380 | 4317 | 4343 |
| 10° | 4355 | 4274 | 4295 |
| 15° | 4301 | 4218 | 4214 |
| 20° | 4224 | 4135 | 4131 |
| 25° | 4148 | 4033 | 4033 |
| 30° | 4051 | 3939 | 3905 |
| 35° | 3960 | 3827 | 3770 |
| 40° | 3845 | 3714 | 3643 |
| 45° | 3733 | 3602 | 3513 |
| 50° | 3610 | 3486 | 3362 |
| 55° | 3483 | 3351 | 3227 |
| 60° | 3340 | 3189 | 3072 |
| 65° | 3188 | 3028 | 2890 |
| 70° | 2994 | 2834 | 2700 |
| 75° | 2723 | 2610 | 2546 |
| 80° | 2418 | 2343 | 2223 |
| 85° | 1972 | 1880 | 1686 |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 3733 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 329.6  | 3.7       |
| 10°-20°   | 927.4  | 10.4      |
| 20°-30°   | 1362.9 | 15.3      |
| 30°-40°   | 1582.9 | 17.8      |
| 40°-50°   | 1580.9 | 17.7      |
| 50°-60°   | 1378.5 | 15.5      |
| 60°-70°   | 1019.0 | 11.4      |
| 70°-80°   | 576.6  | 6.5       |
| 80°-90°   | 152.2  | 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°    | 2619.9 | 29.4      |
| 0°-40°    | 4202.8 | 47.2      |
| 0°-60°    | 7162.3 | 80.4      |
| 0°-90°    | 8910.0 | 100.0     |
| 90°-120°  | 0.0    | 0.0       |
| 90°-150°  | 0.0    | 0.0       |
| 90°-180°  | 0.0    | 0.0       |
| 0°-180°   | 8910.0 | 100.0     |

**CANDELA DISTRIBUTION:**

|     | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|-----|------|-------|------|-------|------|------|
| 0°  | 3502 | 3502  | 3502 | 3502  | 3502 |      |
| 5°  | 3502 | 3489  | 3452 | 3478  | 3472 | 332  |
| 15° | 3334 | 3314  | 3270 | 3283  | 3266 | 939  |
| 25° | 3017 | 2990  | 2933 | 2940  | 2933 | 1388 |
| 35° | 2603 | 2570  | 2516 | 2495  | 2478 | 1626 |
| 45° | 2118 | 2095  | 2044 | 2007  | 1994 | 1635 |
| 55° | 1603 | 1583  | 1542 | 1502  | 1485 | 1433 |
| 65° | 1081 | 1061  | 1027 | 997   | 980  | 1069 |
| 75° | 566  | 559   | 542  | 522   | 529  | 604  |
| 85° | 138  | 135   | 132  | 121   | 118  | 162  |
| 90° | 0    | 0     | 0    | 0     | 0    |      |

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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|-------|--------|--------|--------|--------|--------|
| 0°    | 3501.9 | 3501.9 | 3501.9 | 3501.9 | 3501.9 |
| 2.5°  | 3522.3 | 3505.5 | 3468.4 | 3501.9 | 3495.5 |
| 5°    | 3501.9 | 3488.7 | 3451.6 | 3478.4 | 3471.9 |
| 7.5°  | 3478.4 | 3458.4 | 3421.2 | 3448.4 | 3441.6 |
| 10°   | 3441.6 | 3418.0 | 3377.6 | 3404.4 | 3394.4 |
| 12.5° | 3390.8 | 3370.8 | 3330.5 | 3347.2 | 3340.5 |
| 15°   | 3333.7 | 3313.7 | 3269.7 | 3283.3 | 3266.5 |
| 17.5° | 3262.9 | 3242.9 | 3199.0 | 3215.8 | 3199.0 |
| 20°   | 3185.4 | 3165.4 | 3118.2 | 3128.2 | 3115.0 |
| 22.5° | 3108.2 | 3077.9 | 3033.9 | 3033.9 | 3027.1 |
| 25°   | 3017.1 | 2990.3 | 2933.2 | 2939.6 | 2933.2 |
| 27.5° | 2916.0 | 2892.4 | 2848.9 | 2838.9 | 2822.1 |
| 30°   | 2815.3 | 2788.1 | 2737.7 | 2727.7 | 2714.2 |
| 32.5° | 2707.4 | 2687.4 | 2633.4 | 2613.1 | 2599.5 |
| 35°   | 2603.1 | 2569.5 | 2515.5 | 2495.2 | 2478.4 |
| 37.5° | 2485.2 | 2454.8 | 2400.8 | 2377.3 | 2360.5 |
| 40°   | 2364.0 | 2336.9 | 2282.9 | 2252.9 | 2239.4 |
| 42.5° | 2246.1 | 2219.0 | 2165.4 | 2131.5 | 2111.5 |
| 45°   | 2118.2 | 2094.7 | 2043.9 | 2007.1 | 1993.6 |
| 47.5° | 1993.6 | 1970.0 | 1916.0 | 1878.9 | 1858.9 |
| 50°   | 1862.1 | 1845.3 | 1798.1 | 1751.0 | 1734.2 |
| 52.5° | 1734.2 | 1710.6 | 1667.0 | 1629.9 | 1606.3 |
| 55°   | 1603.1 | 1582.7 | 1542.3 | 1502.0 | 1485.2 |
| 57.5° | 1471.6 | 1454.8 | 1410.9 | 1370.5 | 1356.9 |
| 60°   | 1340.1 | 1326.9 | 1279.7 | 1242.6 | 1232.6 |
| 62.5° | 1212.2 | 1188.6 | 1155.0 | 1121.5 | 1107.9 |
| 65°   | 1081.1 | 1060.7 | 1027.1 | 996.8  | 980.0  |
| 67.5° | 946.4  | 929.3  | 899.2  | 875.7  | 862.1  |
| 70°   | 821.7  | 808.1  | 777.8  | 754.2  | 741.0  |
| 72.5° | 693.8  | 680.2  | 663.4  | 639.9  | 629.9  |
| 75°   | 565.6  | 559.1  | 542.0  | 522.0  | 528.8  |
| 77.5° | 451.2  | 437.7  | 430.9  | 420.9  | 410.9  |
| 80°   | 336.9  | 333.3  | 326.5  | 316.5  | 309.8  |
| 82.5° | 229.0  | 229.0  | 225.8  | 212.2  | 212.2  |
| 85°   | 137.9  | 134.7  | 131.5  | 121.1  | 117.9  |
| 87.5° | 60.7   | 53.9   | 47.2   | 37.2   | 33.6   |
| 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 | 16.40            | 18.01 | 16.77 | 18.33 | 18.64 | 15.96          | 17.57 | 16.32 | 17.88 | 18.20 |
|                 | 3H   | 18.15            | 19.61 | 18.53 | 19.93 | 20.29 | 17.66          | 19.12 | 18.04 | 19.44 | 19.80 |
|                 | 4H   | 18.80            | 20.17 | 19.20 | 20.51 | 20.89 | 18.30          | 19.67 | 18.70 | 20.02 | 20.40 |
|                 | 6H   | 19.27            | 20.54 | 19.68 | 20.90 | 21.29 | 18.77          | 20.03 | 19.18 | 20.40 | 20.79 |
|                 | 8H   | 19.41            | 20.62 | 19.83 | 21.01 | 21.41 | 18.91          | 20.12 | 19.33 | 20.51 | 20.91 |
|                 | 12H  | 19.50            | 20.66 | 19.93 | 21.04 | 21.47 | 18.99          | 20.15 | 19.42 | 20.53 | 20.96 |
| 4H              | 2H   | 16.96            | 18.33 | 17.36 | 18.68 | 19.05 | 16.61          | 17.98 | 17.01 | 18.33 | 18.70 |
|                 | 3H   | 18.94            | 20.08 | 19.35 | 20.48 | 20.88 | 18.53          | 19.68 | 18.94 | 20.07 | 20.47 |
|                 | 4H   | 19.71            | 20.75 | 20.14 | 21.16 | 21.60 | 19.29          | 20.33 | 19.72 | 20.74 | 21.18 |
|                 | 6H   | 20.31            | 21.21 | 20.76 | 21.66 | 22.11 | 19.88          | 20.78 | 20.33 | 21.22 | 21.68 |
|                 | 8H   | 20.50            | 21.35 | 20.96 | 21.79 | 22.25 | 20.06          | 20.91 | 20.52 | 21.35 | 21.82 |
|                 | 12H  | 20.63            | 21.39 | 21.11 | 21.87 | 22.34 | 20.18          | 20.94 | 20.66 | 21.42 | 21.88 |
| 8H              | 4H   | 19.99            | 20.83 | 20.45 | 21.28 | 21.74 | 19.61          | 20.46 | 20.07 | 20.90 | 21.37 |
|                 | 6H   | 20.70            | 21.40 | 21.19 | 21.89 | 22.37 | 20.32          | 21.02 | 20.81 | 21.51 | 21.99 |
|                 | 8H   | 20.96            | 21.59 | 21.47 | 22.10 | 22.58 | 20.57          | 21.20 | 21.08 | 21.71 | 22.19 |
|                 | 12H  | 21.16            | 21.72 | 21.67 | 22.21 | 22.77 | 20.75          | 21.30 | 21.25 | 21.80 | 22.36 |
| 12H             | 4H   | 20.01            | 20.77 | 20.49 | 21.25 | 21.72 | 19.65          | 20.41 | 20.13 | 20.88 | 21.35 |
|                 | 6H   | 20.75            | 21.38 | 21.26 | 21.89 | 22.37 | 20.38          | 21.01 | 20.89 | 21.52 | 22.00 |
|                 | 8H   | 21.06            | 21.62 | 21.57 | 22.11 | 22.67 | 20.68          | 21.24 | 21.19 | 21.73 | 22.29 |