

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: P931589

Luminaire Tested: DFN2DS-TR4F0-120DS835-FLL

Issue Date: 11/20/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P931589  
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-TR4F0-120DS835-FLL  
Description: 4 foot, Triangle Define Geo, with Direct Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

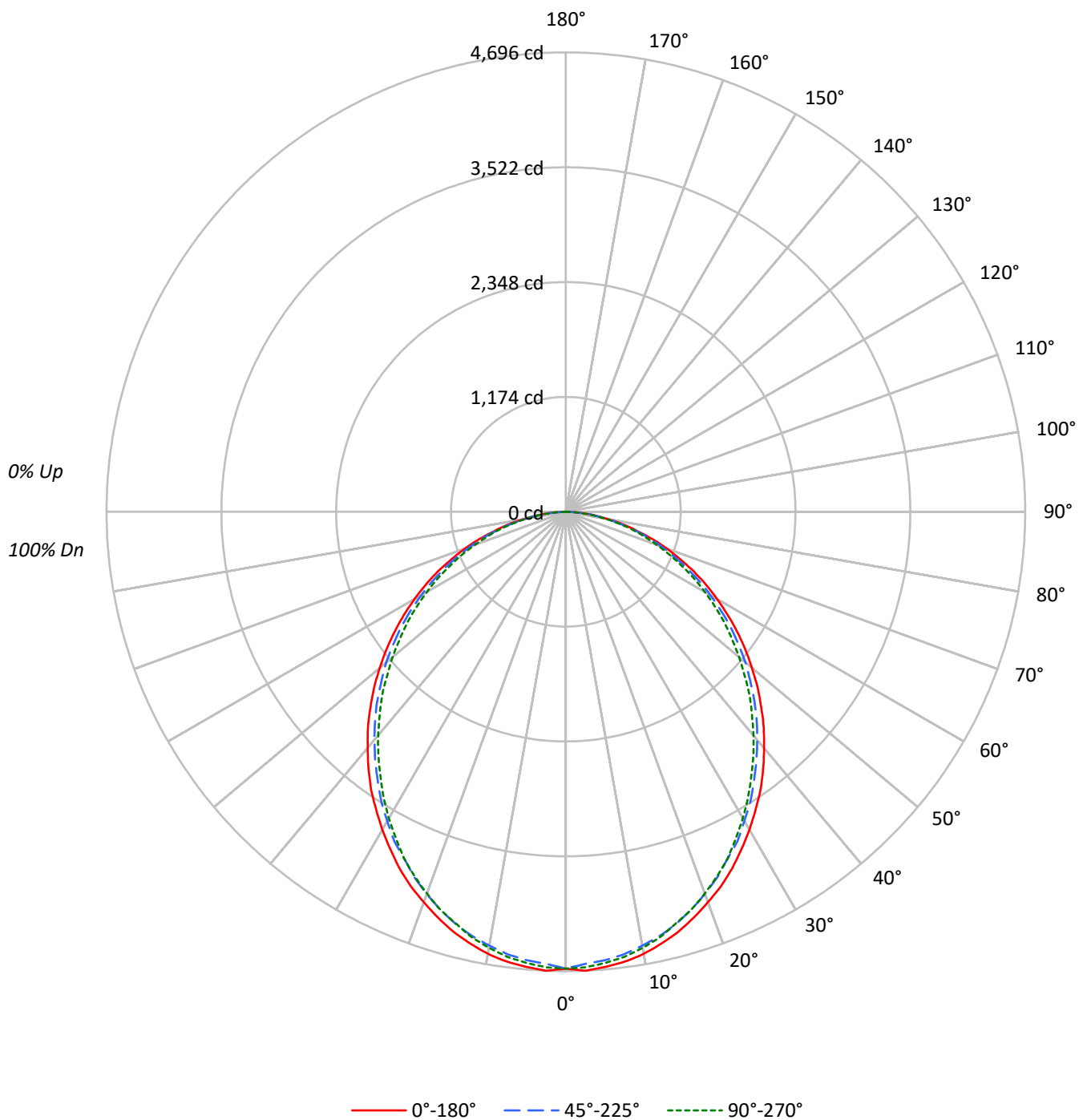
Lumens per Lamp: N/A  
Luminaire Lumens: 11880.0 lumens  
Efficiency: N/A  
Efficacy: 90.1 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
Luminous Opening: Rectangular (W 3.96' x L: 3.43' x H: 0')  
CIE Type: Direct

Input Watts (W): 131.9  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9821  
Total Harmonic Distortion (THDi): 0.08  
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°  | 3709 | 3709 | 3709 |
| 5°  | 3724 | 3670 | 3692 |
| 10° | 3702 | 3633 | 3651 |
| 15° | 3656 | 3586 | 3582 |
| 20° | 3591 | 3515 | 3511 |
| 25° | 3526 | 3428 | 3428 |
| 30° | 3443 | 3349 | 3320 |
| 35° | 3366 | 3253 | 3205 |
| 40° | 3269 | 3157 | 3096 |
| 45° | 3173 | 3062 | 2986 |
| 50° | 3069 | 2963 | 2858 |
| 55° | 2960 | 2848 | 2743 |
| 60° | 2839 | 2711 | 2611 |
| 65° | 2710 | 2574 | 2456 |
| 70° | 2545 | 2409 | 2295 |
| 75° | 2315 | 2218 | 2164 |
| 80° | 2055 | 1992 | 1889 |
| 85° | 1676 | 1598 | 1433 |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 3173 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 439.5   | 3.7       |
| 10°-20°   | 1236.5  | 10.4      |
| 20°-30°   | 1817.2  | 15.3      |
| 30°-40°   | 2110.5  | 17.8      |
| 40°-50°   | 2107.9  | 17.7      |
| 50°-60°   | 1838.0  | 15.5      |
| 60°-70°   | 1358.7  | 11.4      |
| 70°-80°   | 768.7   | 6.5       |
| 80°-90°   | 202.9   | 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°    | 3493.1  | 29.4      |
| 0°-40°    | 5603.7  | 47.2      |
| 0°-60°    | 9549.6  | 80.4      |
| 0°-90°    | 11880.0 | 100.0     |
| 90°-120°  | 0.0     | 0.0       |
| 90°-150°  | 0.0     | 0.0       |
| 90°-180°  | 0.0     | 0.0       |
| 0°-180°   | 11880.0 | 100.0     |

**CANDELA DISTRIBUTION:**

|     | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|-----|------|-------|------|-------|------|------|
| 0°  | 4669 | 4669  | 4669 | 4669  | 4669 |      |
| 5°  | 4669 | 4652  | 4602 | 4638  | 4629 | 443  |
| 15° | 4445 | 4418  | 4360 | 4378  | 4355 | 1252 |
| 25° | 4023 | 3987  | 3911 | 3920  | 3911 | 1851 |
| 35° | 3471 | 3426  | 3354 | 3327  | 3304 | 2167 |
| 45° | 2824 | 2793  | 2725 | 2676  | 2658 | 2180 |
| 55° | 2137 | 2110  | 2056 | 2003  | 1980 | 1911 |
| 65° | 1442 | 1414  | 1370 | 1329  | 1307 | 1425 |
| 75° | 754  | 746   | 723  | 696   | 705  | 805  |
| 85° | 184  | 180   | 175  | 162   | 157  | 216  |
| 90° | 0    | 0     | 0    | 0     | 0    |      |

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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|-------|--------|--------|--------|--------|--------|
| 0°    | 4669.3 | 4669.3 | 4669.3 | 4669.3 | 4669.3 |
| 2.5°  | 4696.4 | 4674.0 | 4624.5 | 4669.3 | 4660.7 |
| 5°    | 4669.3 | 4651.6 | 4602.1 | 4637.8 | 4629.2 |
| 7.5°  | 4637.8 | 4611.1 | 4561.6 | 4597.8 | 4588.8 |
| 10°   | 4588.8 | 4557.3 | 4503.5 | 4539.2 | 4525.9 |
| 12.5° | 4521.1 | 4494.4 | 4440.6 | 4463.0 | 4453.9 |
| 15°   | 4444.9 | 4418.2 | 4359.6 | 4377.7 | 4355.3 |
| 17.5° | 4350.6 | 4323.9 | 4265.3 | 4287.7 | 4265.3 |
| 20°   | 4247.2 | 4220.5 | 4157.7 | 4171.0 | 4153.4 |
| 22.5° | 4144.3 | 4103.8 | 4045.2 | 4045.2 | 4036.2 |
| 25°   | 4022.8 | 3987.1 | 3910.9 | 3919.5 | 3910.9 |
| 27.5° | 3888.0 | 3856.6 | 3798.5 | 3785.1 | 3762.8 |
| 30°   | 3753.7 | 3717.5 | 3650.3 | 3637.0 | 3618.9 |
| 32.5° | 3609.8 | 3583.2 | 3511.2 | 3484.1 | 3466.0 |
| 35°   | 3470.7 | 3426.0 | 3354.0 | 3326.9 | 3304.5 |
| 37.5° | 3313.5 | 3273.1 | 3201.1 | 3169.7 | 3147.3 |
| 40°   | 3152.1 | 3115.9 | 3043.9 | 3003.9 | 2985.8 |
| 42.5° | 2994.9 | 2958.7 | 2887.2 | 2842.0 | 2815.3 |
| 45°   | 2824.3 | 2792.9 | 2725.2 | 2676.2 | 2658.1 |
| 47.5° | 2658.1 | 2626.6 | 2554.7 | 2505.2 | 2478.5 |
| 50°   | 2482.8 | 2460.4 | 2397.5 | 2334.6 | 2312.2 |
| 52.5° | 2312.2 | 2280.8 | 2222.7 | 2173.1 | 2141.7 |
| 55°   | 2137.4 | 2110.3 | 2056.4 | 2002.6 | 1980.2 |
| 57.5° | 1962.1 | 1939.7 | 1881.1 | 1827.3 | 1809.2 |
| 60°   | 1786.8 | 1769.2 | 1706.3 | 1656.8 | 1643.4 |
| 62.5° | 1616.3 | 1584.8 | 1540.1 | 1495.3 | 1477.2 |
| 65°   | 1441.5 | 1414.3 | 1369.5 | 1329.0 | 1306.7 |
| 67.5° | 1261.9 | 1239.0 | 1199.0 | 1167.6 | 1149.5 |
| 70°   | 1095.6 | 1077.5 | 1037.0 | 1005.6 | 988.0  |
| 72.5° | 925.1  | 907.0  | 884.6  | 853.2  | 839.8  |
| 75°   | 754.1  | 745.5  | 722.6  | 696.0  | 705.0  |
| 77.5° | 601.6  | 583.5  | 574.5  | 561.1  | 547.8  |
| 80°   | 449.2  | 444.4  | 435.4  | 422.1  | 413.0  |
| 82.5° | 305.3  | 305.3  | 301.1  | 283.0  | 283.0  |
| 85°   | 183.9  | 179.6  | 175.3  | 161.5  | 157.2  |
| 87.5° | 81.0   | 71.9   | 62.9   | 49.5   | 44.8   |
| 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 | 15.84            | 17.45 | 16.20 | 17.76 | 18.08 | 15.39          | 17.00 | 15.76 | 17.32 | 17.63 |
|                 | 3H   | 17.59            | 19.04 | 17.96 | 19.37 | 19.73 | 17.10          | 18.55 | 17.47 | 18.88 | 19.24 |
|                 | 4H   | 18.23            | 19.60 | 18.63 | 19.95 | 20.33 | 17.74          | 19.11 | 18.14 | 19.46 | 19.83 |
|                 | 6H   | 18.70            | 19.97 | 19.11 | 20.34 | 20.73 | 18.20          | 19.47 | 18.61 | 19.83 | 20.23 |
|                 | 8H   | 18.85            | 20.06 | 19.27 | 20.45 | 20.84 | 18.34          | 19.55 | 18.77 | 19.94 | 20.34 |
|                 | 12H  | 18.94            | 20.10 | 19.37 | 20.48 | 20.91 | 18.42          | 19.58 | 18.85 | 19.97 | 20.39 |
| 4H              | 2H   | 16.40            | 17.77 | 16.80 | 18.11 | 18.49 | 16.04          | 17.41 | 16.44 | 17.76 | 18.14 |
|                 | 3H   | 18.37            | 19.52 | 18.78 | 19.92 | 20.32 | 17.97          | 19.11 | 18.38 | 19.51 | 19.91 |
|                 | 4H   | 19.15            | 20.18 | 19.58 | 20.60 | 21.03 | 18.73          | 19.76 | 19.16 | 20.17 | 20.61 |
|                 | 6H   | 19.75            | 20.65 | 20.20 | 21.09 | 21.55 | 19.31          | 20.22 | 19.77 | 20.66 | 21.11 |
|                 | 8H   | 19.93            | 20.78 | 20.40 | 21.22 | 21.69 | 19.50          | 20.34 | 19.96 | 20.79 | 21.25 |
|                 | 12H  | 20.07            | 20.83 | 20.55 | 21.30 | 21.77 | 19.61          | 20.37 | 20.10 | 20.85 | 21.32 |
| 8H              | 4H   | 19.42            | 20.27 | 19.88 | 20.71 | 21.18 | 19.05          | 19.89 | 19.51 | 20.34 | 20.80 |
|                 | 6H   | 20.14            | 20.84 | 20.63 | 21.33 | 21.80 | 19.76          | 20.46 | 20.25 | 20.95 | 21.42 |
|                 | 8H   | 20.40            | 21.03 | 20.91 | 21.53 | 22.02 | 20.00          | 20.64 | 20.51 | 21.14 | 21.63 |
|                 | 12H  | 20.60            | 21.15 | 21.10 | 21.64 | 22.21 | 20.18          | 20.74 | 20.69 | 21.23 | 21.79 |
| 12H             | 4H   | 19.45            | 20.21 | 19.93 | 20.68 | 21.15 | 19.08          | 19.84 | 19.56 | 20.32 | 20.79 |
|                 | 6H   | 20.18            | 20.81 | 20.69 | 21.32 | 21.81 | 19.81          | 20.45 | 20.32 | 20.95 | 21.44 |
|                 | 8H   | 20.50            | 21.05 | 21.00 | 21.54 | 22.11 | 20.12          | 20.68 | 20.63 | 21.17 | 21.73 |