

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: P931530

Luminaire Tested: DFN2DS-TR4F0-080DS940-RLL

Issue Date: 11/20/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P931530  
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-TR4F0-080DS940-RLL  
Description: 4 foot, Triangle Define Geo, with Direct 1in Regressed Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

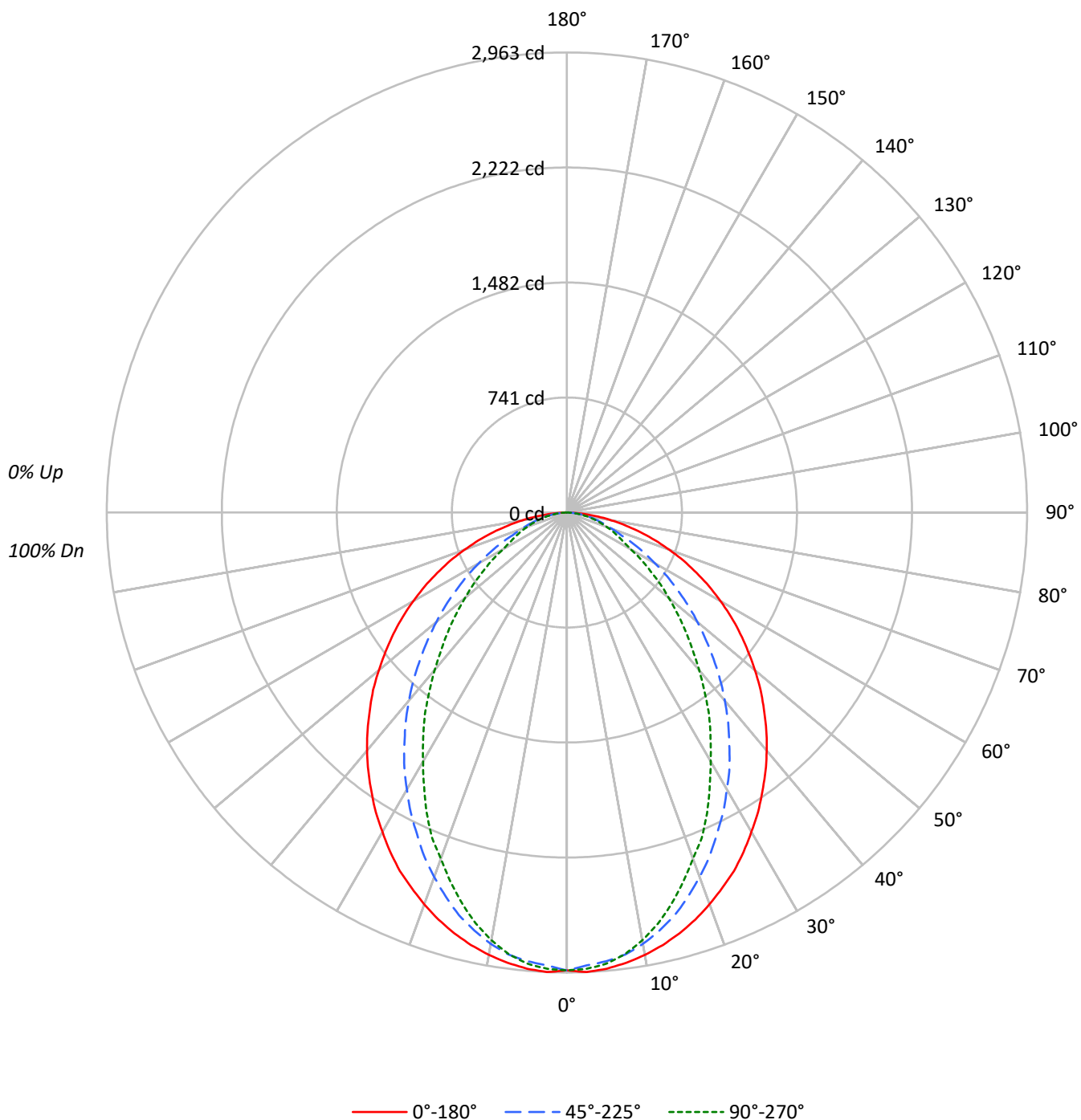
Lumens per Lamp: N/A  
Luminaire Lumens: 6065.6 lumens  
Efficiency: N/A  
Efficacy: 74.6 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular (W 3.96' x L: 3.43' x H: 0')  
CIE Type: Direct

Input Watts (W): 81.3  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9957  
Total Harmonic Distortion (THDi): 0.049  
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°  | 2343 | 2343 | 2343 |
| 5°  | 2352 | 2314 | 2326 |
| 10° | 2334 | 2276 | 2256 |
| 15° | 2307 | 2208 | 2145 |
| 20° | 2270 | 2112 | 2006 |
| 25° | 2232 | 2003 | 1872 |
| 30° | 2179 | 1890 | 1699 |
| 35° | 2128 | 1768 | 1548 |
| 40° | 2076 | 1641 | 1373 |
| 45° | 2015 | 1499 | 1214 |
| 50° | 1953 | 1356 | 1059 |
| 55° | 1889 | 1201 | 910  |
| 60° | 1815 | 1039 | 755  |
| 65° | 1731 | 873  | 687  |
| 70° | 1631 | 719  | 632  |
| 75° | 1507 | 655  | 590  |
| 80° | 1330 | 586  | 538  |
| 85° | 1046 | 462  | 462  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 2015 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 276.4  | 4.6       |
| 10°-20°   | 758.8  | 12.5      |
| 20°-30°   | 1065.3 | 17.6      |
| 30°-40°   | 1161.3 | 19.1      |
| 40°-50°   | 1067.3 | 17.6      |
| 50°-60°   | 838.3  | 13.8      |
| 60°-70°   | 545.6  | 9.0       |
| 70°-80°   | 280.9  | 4.6       |
| 80°-90°   | 71.7   | 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°    | 2100.6 | 34.6      |
| 0°-40°    | 3261.8 | 53.8      |
| 0°-60°    | 5167.4 | 85.2      |
| 0°-90°    | 6065.6 | 100.0     |
| 90°-120°  | 0.0    | 0.0       |
| 90°-150°  | 0.0    | 0.0       |
| 90°-180°  | 0.0    | 0.0       |
| 0°-180°   | 6065.6 | 100.0     |

**CANDELA DISTRIBUTION:**

|     | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|-----|------|-------|------|-------|------|------|
| 0°  | 2949 | 2949  | 2949 | 2949  | 2949 |      |
| 5°  | 2949 | 2936  | 2901 | 2925  | 2917 | 280  |
| 15° | 2805 | 2776  | 2685 | 2634  | 2608 | 790  |
| 25° | 2546 | 2461  | 2285 | 2175  | 2135 | 1171 |
| 35° | 2194 | 2058  | 1823 | 1655  | 1596 | 1373 |
| 45° | 1794 | 1615  | 1335 | 1145  | 1081 | 1385 |
| 55° | 1364 | 1156  | 867  | 707   | 657  | 1219 |
| 65° | 921  | 704   | 464  | 374   | 366  | 913  |
| 75° | 491  | 304   | 214  | 195   | 192  | 519  |
| 85° | 115  | 59    | 51   | 51    | 51   | 138  |
| 90° | 0    | 0     | 0    | 0     | 0    |      |

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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|-------|--------|--------|--------|--------|--------|
| 0°    | 2949.3 | 2949.3 | 2949.3 | 2949.3 | 2949.3 |
| 2.5°  | 2962.6 | 2949.3 | 2919.9 | 2946.7 | 2941.4 |
| 5°    | 2949.3 | 2936.0 | 2901.1 | 2925.2 | 2917.3 |
| 7.5°  | 2925.2 | 2909.3 | 2872.0 | 2882.5 | 2869.1 |
| 10°   | 2893.2 | 2874.6 | 2821.3 | 2813.1 | 2797.2 |
| 12.5° | 2853.3 | 2829.2 | 2757.0 | 2741.1 | 2711.7 |
| 15°   | 2805.2 | 2775.7 | 2685.1 | 2634.4 | 2607.8 |
| 17.5° | 2749.1 | 2706.3 | 2594.2 | 2535.6 | 2492.8 |
| 20°   | 2685.1 | 2631.6 | 2498.2 | 2431.7 | 2372.7 |
| 22.5° | 2615.7 | 2554.2 | 2399.4 | 2308.8 | 2268.8 |
| 25°   | 2546.3 | 2460.8 | 2284.7 | 2175.4 | 2135.2 |
| 27.5° | 2463.6 | 2372.7 | 2177.9 | 2052.5 | 1991.0 |
| 30°   | 2375.6 | 2273.9 | 2060.4 | 1924.5 | 1852.2 |
| 32.5° | 2290.0 | 2167.2 | 1948.6 | 1788.3 | 1721.5 |
| 35°   | 2194.1 | 2057.8 | 1823.1 | 1654.9 | 1596.0 |
| 37.5° | 2100.6 | 1953.7 | 1705.6 | 1521.2 | 1454.7 |
| 40°   | 2001.8 | 1841.8 | 1582.7 | 1393.2 | 1323.8 |
| 42.5° | 1900.4 | 1729.7 | 1460.0 | 1262.4 | 1195.8 |
| 45°   | 1793.6 | 1614.7 | 1334.6 | 1144.9 | 1080.9 |
| 47.5° | 1692.3 | 1502.8 | 1214.5 | 1024.8 | 966.2  |
| 50°   | 1580.1 | 1390.7 | 1097.1 | 912.7  | 856.9  |
| 52.5° | 1470.6 | 1270.3 | 984.9  | 808.8  | 758.1  |
| 55°   | 1363.8 | 1155.7 | 867.4  | 707.4  | 656.7  |
| 57.5° | 1254.5 | 1041.0 | 763.5  | 614.0  | 571.1  |
| 60°   | 1142.3 | 928.8  | 653.8  | 517.9  | 475.2  |
| 62.5° | 1033.0 | 819.5  | 560.4  | 432.4  | 411.2  |
| 65°   | 920.9  | 704.5  | 464.4  | 373.8  | 365.5  |
| 67.5° | 814.1  | 597.8  | 373.8  | 328.2  | 320.3  |
| 70°   | 702.0  | 493.9  | 309.5  | 282.9  | 272.1  |
| 72.5° | 595.2  | 397.6  | 258.9  | 237.6  | 232.2  |
| 75°   | 491.0  | 304.2  | 213.5  | 194.8  | 192.3  |
| 77.5° | 387.1  | 216.0  | 168.2  | 157.4  | 152.1  |
| 80°   | 290.8  | 154.9  | 128.0  | 117.5  | 117.5  |
| 82.5° | 202.8  | 104.2  | 88.0   | 82.7   | 82.7   |
| 85°   | 114.7  | 58.6   | 50.7   | 50.7   | 50.7   |
| 87.5° | 42.7   | 21.2   | 21.2   | 18.7   | 18.7   |
| 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 | 14.19            | 15.71 | 14.56 | 16.03 | 16.34 | 10.15          | 11.68 | 10.52 | 11.99 | 12.30 |
|                 | 3H   | 15.96            | 17.32 | 16.34 | 17.65 | 18.01 | 11.42          | 12.78 | 11.80 | 13.11 | 13.47 |
|                 | 4H   | 16.62            | 17.91 | 17.02 | 18.25 | 18.63 | 11.92          | 13.20 | 12.32 | 13.55 | 13.93 |
|                 | 6H   | 17.11            | 18.30 | 17.53 | 18.66 | 19.05 | 12.30          | 13.48 | 12.71 | 13.85 | 14.24 |
|                 | 8H   | 17.28            | 18.41 | 17.71 | 18.79 | 19.20 | 12.43          | 13.55 | 12.85 | 13.94 | 14.34 |
|                 | 12H  | 17.38            | 18.46 | 17.81 | 18.84 | 19.27 | 12.51          | 13.59 | 12.94 | 13.97 | 14.40 |
| 4H              | 2H   | 14.30            | 15.58 | 14.70 | 15.93 | 16.30 | 10.85          | 12.13 | 11.25 | 12.48 | 12.86 |
|                 | 3H   | 16.23            | 17.29 | 16.64 | 17.69 | 18.09 | 12.29          | 13.36 | 12.70 | 13.75 | 14.16 |
|                 | 4H   | 16.98            | 17.94 | 17.41 | 18.35 | 18.79 | 12.89          | 13.85 | 13.32 | 14.26 | 14.70 |
|                 | 6H   | 17.57            | 18.40 | 18.03 | 18.85 | 19.31 | 13.38          | 14.21 | 13.84 | 14.65 | 15.11 |
|                 | 8H   | 17.79            | 18.56 | 18.25 | 19.01 | 19.47 | 13.54          | 14.32 | 14.01 | 14.76 | 15.23 |
|                 | 12H  | 17.94            | 18.63 | 18.42 | 19.11 | 19.58 | 13.66          | 14.35 | 14.14 | 14.83 | 15.30 |
| 8H              | 4H   | 17.00            | 17.78 | 17.47 | 18.23 | 18.69 | 13.25          | 14.02 | 13.71 | 14.47 | 14.93 |
|                 | 6H   | 17.64            | 18.28 | 18.14 | 18.78 | 19.25 | 13.83          | 14.47 | 14.33 | 14.97 | 15.44 |
|                 | 8H   | 17.89            | 18.47 | 18.41 | 18.98 | 19.47 | 14.05          | 14.63 | 14.57 | 15.14 | 15.63 |
|                 | 12H  | 18.10            | 18.61 | 18.61 | 19.10 | 19.66 | 14.23          | 14.74 | 14.74 | 15.23 | 15.80 |
| 12H             | 4H   | 16.99            | 17.68 | 17.47 | 18.16 | 18.63 | 13.29          | 13.98 | 13.77 | 14.46 | 14.93 |
|                 | 6H   | 17.62            | 18.20 | 18.14 | 18.71 | 19.20 | 13.90          | 14.47 | 14.41 | 14.98 | 15.47 |
|                 | 8H   | 17.91            | 18.42 | 18.42 | 18.91 | 19.47 | 14.17          | 14.68 | 14.68 | 15.17 | 15.74 |