

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: P930004

Luminaire Tested: DFN2DS-4P4F0-070DS830-RLL

Issue Date: 11/20/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P930004  
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-4P4F0-070DS830-RLL  
Description: 4 foot, 90deg - 4way Define Geo, with Direct 1in Regressed Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

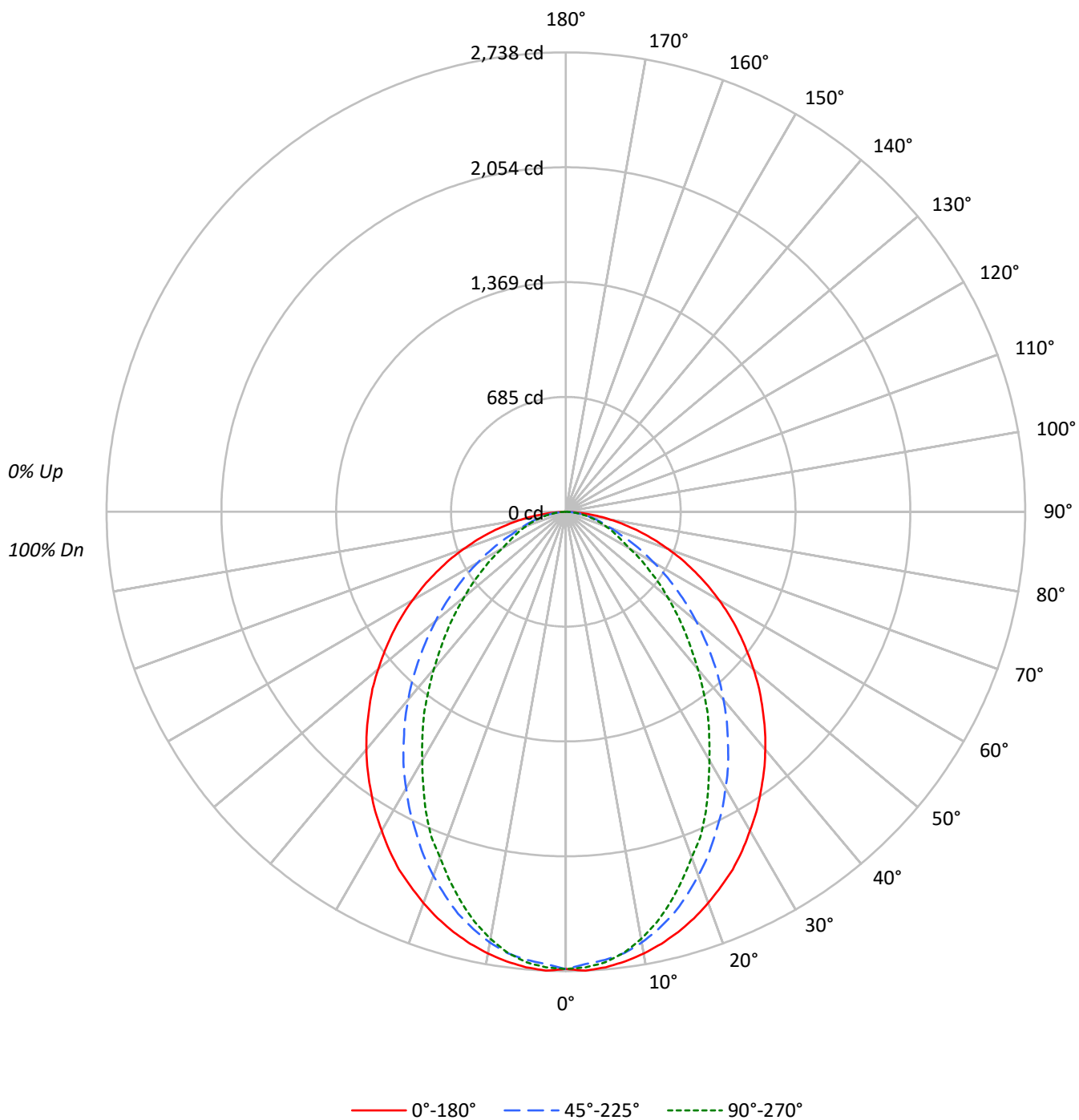
Lumens per Lamp: N/A  
Luminaire Lumens: 5604.9 lumens  
Efficiency: N/A  
Efficacy: 74.9 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular (W 4.07' x L: 4.07' x H: 0')  
CIE Type: Direct

Input Watts (W): 74.8  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9789  
Total Harmonic Distortion (THDi): 0.074  
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°  | 1768 | 1768 | 1768 |
| 5°  | 1775 | 1746 | 1755 |
| 10° | 1761 | 1717 | 1703 |
| 15° | 1741 | 1666 | 1618 |
| 20° | 1713 | 1594 | 1514 |
| 25° | 1684 | 1511 | 1412 |
| 30° | 1644 | 1426 | 1282 |
| 35° | 1606 | 1334 | 1168 |
| 40° | 1566 | 1239 | 1036 |
| 45° | 1521 | 1131 | 916  |
| 50° | 1474 | 1023 | 799  |
| 55° | 1425 | 907  | 686  |
| 60° | 1370 | 784  | 570  |
| 65° | 1306 | 659  | 519  |
| 70° | 1230 | 542  | 477  |
| 75° | 1137 | 495  | 445  |
| 80° | 1004 | 442  | 406  |
| 85° | 789  | 348  | 348  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
Vertical Angle: 45°  
Luminance: 1521 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 255.4  | 4.6       |
| 10°-20°   | 701.2  | 12.5      |
| 20°-30°   | 984.4  | 17.6      |
| 30°-40°   | 1073.1 | 19.1      |
| 40°-50°   | 986.3  | 17.6      |
| 50°-60°   | 774.6  | 13.8      |
| 60°-70°   | 504.2  | 9.0       |
| 70°-80°   | 259.5  | 4.6       |
| 80°-90°   | 66.2   | 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°    | 1941.0 | 34.6      |
| 0°-40°    | 3014.1 | 53.8      |
| 0°-60°    | 4775.0 | 85.2      |
| 0°-90°    | 5604.9 | 100.0     |
| 90°-120°  | 0.0    | 0.0       |
| 90°-150°  | 0.0    | 0.0       |
| 90°-180°  | 0.0    | 0.0       |
| 0°-180°   | 5604.9 | 100.0     |

**CANDELA DISTRIBUTION:**

|     | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|-----|------|-------|------|-------|------|------|
| 0°  | 2725 | 2725  | 2725 | 2725  | 2725 |      |
| 5°  | 2725 | 2713  | 2681 | 2703  | 2696 | 258  |
| 15° | 2592 | 2565  | 2481 | 2434  | 2410 | 730  |
| 25° | 2353 | 2274  | 2111 | 2010  | 1973 | 1082 |
| 35° | 2027 | 1902  | 1685 | 1529  | 1475 | 1269 |
| 45° | 1657 | 1492  | 1233 | 1058  | 999  | 1280 |
| 55° | 1260 | 1068  | 802  | 654   | 607  | 1126 |
| 65° | 851  | 651   | 429  | 345   | 338  | 844  |
| 75° | 454  | 281   | 197  | 180   | 178  | 480  |
| 85° | 106  | 54    | 47   | 47    | 47   | 127  |
| 90° | 0    | 0     | 0    | 0     | 0    |      |

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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|-------|--------|--------|--------|--------|--------|
| 0°    | 2725.3 | 2725.3 | 2725.3 | 2725.3 | 2725.3 |
| 2.5°  | 2737.5 | 2725.3 | 2698.1 | 2722.9 | 2718.0 |
| 5°    | 2725.3 | 2713.0 | 2680.8 | 2703.1 | 2695.7 |
| 7.5°  | 2703.1 | 2688.4 | 2653.9 | 2663.5 | 2651.3 |
| 10°   | 2673.5 | 2656.3 | 2607.0 | 2599.4 | 2584.8 |
| 12.5° | 2636.6 | 2614.3 | 2547.6 | 2532.9 | 2505.7 |
| 15°   | 2592.1 | 2564.9 | 2481.1 | 2434.3 | 2409.7 |
| 17.5° | 2540.3 | 2500.8 | 2397.2 | 2342.9 | 2303.5 |
| 20°   | 2481.1 | 2431.7 | 2308.5 | 2247.0 | 2192.5 |
| 22.5° | 2417.1 | 2360.3 | 2217.1 | 2133.3 | 2096.5 |
| 25°   | 2352.9 | 2273.9 | 2111.1 | 2010.1 | 1973.0 |
| 27.5° | 2276.5 | 2192.5 | 2012.5 | 1896.6 | 1839.8 |
| 30°   | 2195.1 | 2101.2 | 1903.9 | 1778.3 | 1711.6 |
| 32.5° | 2116.1 | 2002.6 | 1800.5 | 1652.5 | 1590.7 |
| 35°   | 2027.4 | 1901.5 | 1684.7 | 1529.2 | 1474.8 |
| 37.5° | 1941.1 | 1805.2 | 1576.1 | 1405.7 | 1344.2 |
| 40°   | 1849.7 | 1701.9 | 1462.5 | 1287.4 | 1223.3 |
| 42.5° | 1756.1 | 1598.3 | 1349.1 | 1166.5 | 1105.1 |
| 45°   | 1657.4 | 1492.0 | 1233.3 | 1058.0 | 998.8  |
| 47.5° | 1563.7 | 1388.7 | 1122.3 | 947.0  | 892.8  |
| 50°   | 1460.1 | 1285.1 | 1013.7 | 843.4  | 791.8  |
| 52.5° | 1358.8 | 1173.8 | 910.1  | 747.3  | 700.5  |
| 55°   | 1260.2 | 1067.9 | 801.5  | 653.7  | 606.8  |
| 57.5° | 1159.2 | 961.9  | 705.5  | 567.3  | 527.8  |
| 60°   | 1055.6 | 858.3  | 604.2  | 478.6  | 439.1  |
| 62.5° | 954.5  | 757.3  | 517.8  | 399.6  | 379.9  |
| 65°   | 850.9  | 651.0  | 429.2  | 345.4  | 337.8  |
| 67.5° | 752.3  | 552.4  | 345.4  | 303.2  | 296.0  |
| 70°   | 648.7  | 456.3  | 286.0  | 261.4  | 251.4  |
| 72.5° | 550.0  | 367.4  | 239.2  | 219.6  | 214.6  |
| 75°   | 453.8  | 281.0  | 197.3  | 180.0  | 177.7  |
| 77.5° | 357.7  | 199.6  | 155.4  | 145.4  | 140.5  |
| 80°   | 268.8  | 143.1  | 118.3  | 108.6  | 108.6  |
| 82.5° | 187.4  | 96.3   | 81.4   | 76.4   | 76.4   |
| 85°   | 106.0  | 54.2   | 46.8   | 46.8   | 46.8   |
| 87.5° | 39.5   | 19.6   | 19.6   | 17.2   | 17.2   |
| 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 | 13.21            | 14.74 | 13.58 | 15.05 | 15.36 | 9.18           | 10.70 | 9.54  | 11.01 | 11.33 |
|                 | 3H   | 14.98            | 16.35 | 15.36 | 16.67 | 17.03 | 10.44          | 11.81 | 10.82 | 12.13 | 12.50 |
|                 | 4H   | 15.65            | 16.93 | 16.05 | 17.28 | 17.65 | 10.94          | 12.22 | 11.34 | 12.57 | 12.95 |
|                 | 6H   | 16.14            | 17.32 | 16.55 | 17.68 | 18.08 | 11.32          | 12.51 | 11.73 | 12.87 | 13.26 |
|                 | 8H   | 16.30            | 17.43 | 16.73 | 17.82 | 18.22 | 11.45          | 12.57 | 11.87 | 12.96 | 13.36 |
|                 | 12H  | 16.40            | 17.48 | 16.83 | 17.86 | 18.29 | 11.53          | 12.61 | 11.96 | 12.99 | 13.42 |
| 4H              | 2H   | 13.32            | 14.60 | 13.72 | 14.95 | 15.33 | 9.87           | 11.15 | 10.27 | 11.50 | 11.88 |
|                 | 3H   | 15.25            | 16.31 | 15.66 | 16.71 | 17.12 | 11.31          | 12.38 | 11.72 | 12.78 | 13.18 |
|                 | 4H   | 16.00            | 16.96 | 16.43 | 17.37 | 17.81 | 11.91          | 12.87 | 12.35 | 13.29 | 13.72 |
|                 | 6H   | 16.59            | 17.42 | 17.05 | 17.87 | 18.33 | 12.40          | 13.23 | 12.86 | 13.68 | 14.14 |
|                 | 8H   | 16.81            | 17.59 | 17.27 | 18.03 | 18.50 | 12.56          | 13.34 | 13.03 | 13.78 | 14.25 |
|                 | 12H  | 16.96            | 17.66 | 17.44 | 18.13 | 18.61 | 12.68          | 13.37 | 13.16 | 13.85 | 14.32 |
| 8H              | 4H   | 16.03            | 16.80 | 16.49 | 17.25 | 17.71 | 12.27          | 13.04 | 12.73 | 13.49 | 13.96 |
|                 | 6H   | 16.66            | 17.31 | 17.16 | 17.80 | 18.27 | 12.85          | 13.50 | 13.35 | 13.99 | 14.46 |
|                 | 8H   | 16.91            | 17.49 | 17.43 | 18.00 | 18.49 | 13.07          | 13.65 | 13.59 | 14.16 | 14.65 |
|                 | 12H  | 17.12            | 17.63 | 17.63 | 18.12 | 18.68 | 13.25          | 13.76 | 13.76 | 14.26 | 14.82 |
| 12H             | 4H   | 16.01            | 16.70 | 16.49 | 17.18 | 17.65 | 12.31          | 13.00 | 12.79 | 13.48 | 13.95 |
|                 | 6H   | 16.64            | 17.22 | 17.16 | 17.73 | 18.22 | 12.92          | 13.49 | 13.43 | 14.00 | 14.49 |
|                 | 8H   | 16.93            | 17.44 | 17.44 | 17.93 | 18.49 | 13.19          | 13.70 | 13.70 | 14.19 | 14.76 |