

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: P930711

Luminaire Tested: DFN2DS-PN4F0-080DS850-FLL

Issue Date: 11/20/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P930711  
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-PN4F0-080DS850-FLL  
Description: 4 foot, Pentagon Define Geo, with Direct Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

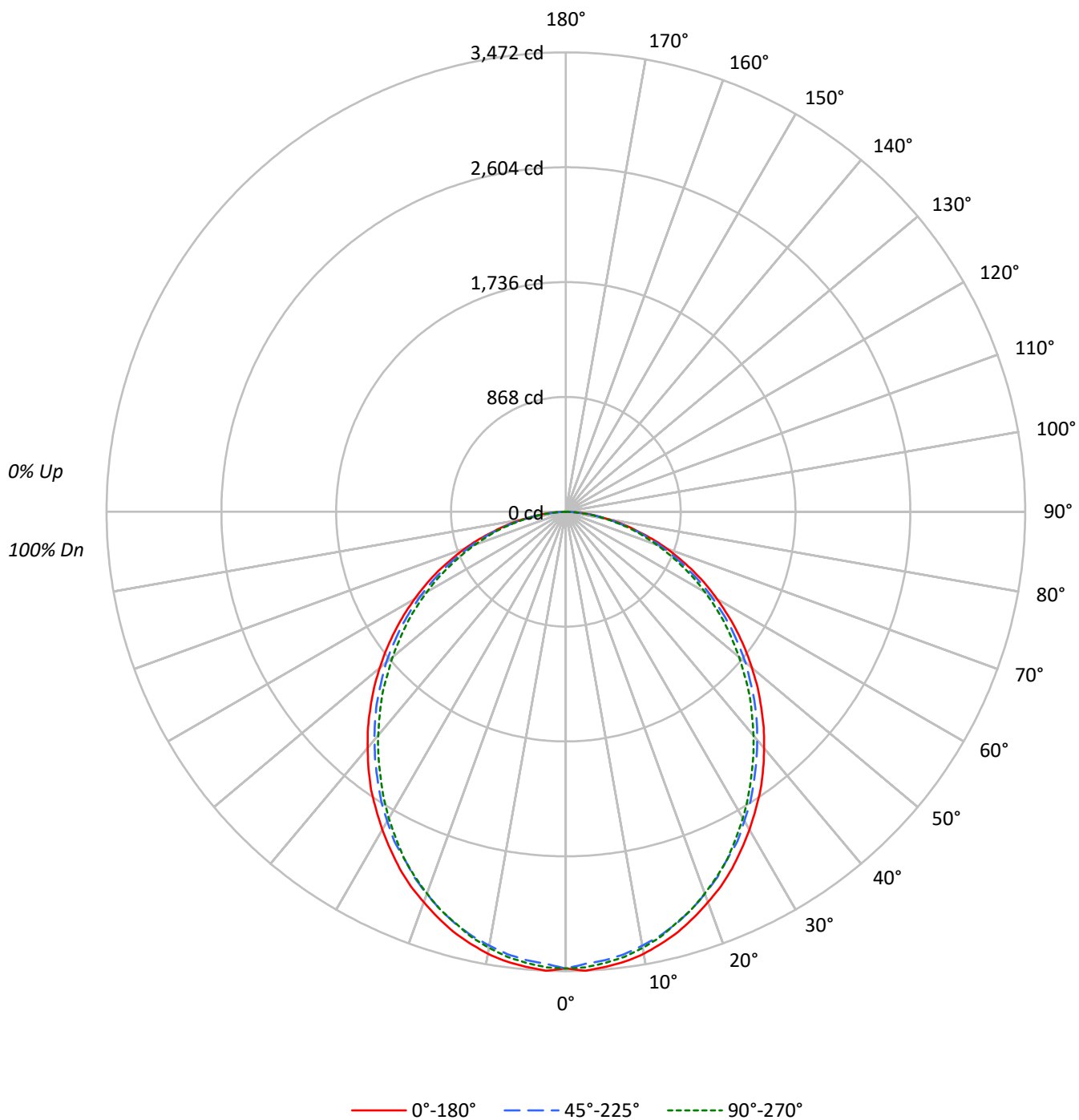
Lumens per Lamp: N/A  
Luminaire Lumens: 8783.3 lumens  
Efficiency: N/A  
Efficacy: 107.2 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
Luminous Opening: Rectangular (W 3.94' x L: 3.74' x H: 0')  
CIE Type: Direct

Input Watts (W): 81.9  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9971  
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   | 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°  | 2520 | 2520 | 2520 |
| 5°  | 2530 | 2493 | 2508 |
| 10° | 2515 | 2468 | 2480 |
| 15° | 2483 | 2436 | 2433 |
| 20° | 2439 | 2388 | 2385 |
| 25° | 2395 | 2329 | 2329 |
| 30° | 2339 | 2275 | 2255 |
| 35° | 2287 | 2210 | 2177 |
| 40° | 2221 | 2144 | 2104 |
| 45° | 2156 | 2080 | 2029 |
| 50° | 2085 | 2013 | 1941 |
| 55° | 2011 | 1935 | 1863 |
| 60° | 1929 | 1842 | 1774 |
| 65° | 1841 | 1749 | 1669 |
| 70° | 1729 | 1637 | 1559 |
| 75° | 1572 | 1507 | 1470 |
| 80° | 1396 | 1353 | 1283 |
| 85° | 1139 | 1085 | 973  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 2156 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 324.9  | 3.7       |
| 10°-20°   | 914.2  | 10.4      |
| 20°-30°   | 1343.5 | 15.3      |
| 30°-40°   | 1560.4 | 17.8      |
| 40°-50°   | 1558.4 | 17.7      |
| 50°-60°   | 1358.9 | 15.5      |
| 60°-70°   | 1004.5 | 11.4      |
| 70°-80°   | 568.4  | 6.5       |
| 80°-90°   | 150.0  | 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°    | 2582.6 | 29.4      |
| 0°-40°    | 4143.0 | 47.2      |
| 0°-60°    | 7060.4 | 80.4      |
| 0°-90°    | 8783.3 | 100.0     |
| 90°-120°  | 0.0    | 0.0       |
| 90°-150°  | 0.0    | 0.0       |
| 90°-180°  | 0.0    | 0.0       |
| 0°-180°   | 8783.3 | 100.0     |

**CANDELA DISTRIBUTION:**

|     | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|-----|------|-------|------|-------|------|------|
| 0°  | 3452 | 3452  | 3452 | 3452  | 3452 |      |
| 5°  | 3452 | 3439  | 3402 | 3429  | 3423 | 328  |
| 15° | 3286 | 3267  | 3223 | 3237  | 3220 | 926  |
| 25° | 2974 | 2948  | 2892 | 2898  | 2892 | 1369 |
| 35° | 2566 | 2533  | 2480 | 2460  | 2443 | 1602 |
| 45° | 2088 | 2065  | 2015 | 1979  | 1965 | 1612 |
| 55° | 1580 | 1560  | 1520 | 1481  | 1464 | 1413 |
| 65° | 1066 | 1046  | 1012 | 983   | 966  | 1054 |
| 75° | 558  | 551   | 534  | 515   | 521  | 595  |
| 85° | 136  | 133   | 130  | 119   | 116  | 160  |
| 90° | 0    | 0     | 0    | 0     | 0    |      |

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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|-------|--------|--------|--------|--------|--------|
| 0°    | 3452.1 | 3452.1 | 3452.1 | 3452.1 | 3452.1 |
| 2.5°  | 3472.2 | 3455.6 | 3419.0 | 3452.1 | 3445.8 |
| 5°    | 3452.1 | 3439.1 | 3402.5 | 3428.9 | 3422.6 |
| 7.5°  | 3428.9 | 3409.2 | 3372.6 | 3399.3 | 3392.7 |
| 10°   | 3392.7 | 3369.4 | 3329.6 | 3355.9 | 3346.2 |
| 12.5° | 3342.6 | 3322.9 | 3283.1 | 3299.6 | 3293.0 |
| 15°   | 3286.3 | 3266.6 | 3223.2 | 3236.6 | 3220.1 |
| 17.5° | 3216.5 | 3196.8 | 3153.4 | 3170.1 | 3153.4 |
| 20°   | 3140.1 | 3120.4 | 3073.9 | 3083.8 | 3070.7 |
| 22.5° | 3064.1 | 3034.1 | 2990.8 | 2990.8 | 2984.1 |
| 25°   | 2974.2 | 2947.8 | 2891.5 | 2897.8 | 2891.5 |
| 27.5° | 2874.5 | 2851.3 | 2808.3 | 2798.5 | 2781.9 |
| 30°   | 2775.3 | 2748.4 | 2698.9 | 2689.0 | 2675.6 |
| 32.5° | 2668.9 | 2649.2 | 2595.9 | 2575.9 | 2562.6 |
| 35°   | 2566.0 | 2533.0 | 2479.7 | 2459.7 | 2443.1 |
| 37.5° | 2449.8 | 2419.8 | 2366.7 | 2343.4 | 2326.9 |
| 40°   | 2330.5 | 2303.6 | 2250.5 | 2220.9 | 2207.5 |
| 42.5° | 2214.2 | 2187.4 | 2134.6 | 2101.1 | 2081.5 |
| 45°   | 2088.1 | 2064.8 | 2014.8 | 1978.6 | 1965.3 |
| 47.5° | 1965.3 | 1942.0 | 1888.7 | 1852.1 | 1832.4 |
| 50°   | 1835.6 | 1819.1 | 1772.5 | 1726.0 | 1709.5 |
| 52.5° | 1709.5 | 1686.2 | 1643.3 | 1606.7 | 1583.4 |
| 55°   | 1580.2 | 1560.1 | 1520.4 | 1480.6 | 1464.0 |
| 57.5° | 1450.7 | 1434.2 | 1390.8 | 1351.0 | 1337.6 |
| 60°   | 1321.0 | 1308.1 | 1261.5 | 1224.9 | 1215.0 |
| 62.5° | 1194.9 | 1171.8 | 1138.6 | 1105.6 | 1092.1 |
| 65°   | 1065.7 | 1045.7 | 1012.5 | 982.6  | 966.0  |
| 67.5° | 932.9  | 916.0  | 886.4  | 863.2  | 849.8  |
| 70°   | 810.0  | 796.6  | 766.8  | 743.5  | 730.4  |
| 72.5° | 683.9  | 670.6  | 654.0  | 630.8  | 620.9  |
| 75°   | 557.5  | 551.2  | 534.3  | 514.6  | 521.2  |
| 77.5° | 444.8  | 431.4  | 424.7  | 414.9  | 405.0  |
| 80°   | 332.1  | 328.6  | 321.9  | 312.1  | 305.3  |
| 82.5° | 225.8  | 225.8  | 222.6  | 209.2  | 209.2  |
| 85°   | 136.0  | 132.7  | 129.6  | 119.4  | 116.2  |
| 87.5° | 59.9   | 53.2   | 46.5   | 36.6   | 33.2   |
| 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 | 14.49            | 16.10 | 14.86 | 16.42 | 16.73 | 14.05          | 15.66 | 14.41 | 15.97 | 16.29 |
|                 | 3H   | 16.24            | 17.70 | 16.62 | 18.02 | 18.39 | 15.75          | 17.21 | 16.13 | 17.53 | 17.89 |
|                 | 4H   | 16.89            | 18.26 | 17.29 | 18.61 | 18.98 | 16.40          | 17.76 | 16.79 | 18.11 | 18.49 |
|                 | 6H   | 17.36            | 18.63 | 17.77 | 18.99 | 19.38 | 16.86          | 18.13 | 17.27 | 18.49 | 18.88 |
|                 | 8H   | 17.50            | 18.71 | 17.93 | 19.10 | 19.50 | 17.00          | 18.21 | 17.42 | 18.60 | 19.00 |
|                 | 12H  | 17.59            | 18.75 | 18.02 | 19.13 | 19.56 | 17.08          | 18.24 | 17.51 | 18.62 | 19.05 |
| 4H              | 2H   | 15.05            | 16.42 | 15.45 | 16.77 | 17.15 | 14.70          | 16.07 | 15.10 | 16.42 | 16.79 |
|                 | 3H   | 17.03            | 18.18 | 17.44 | 18.57 | 18.97 | 16.62          | 17.77 | 17.03 | 18.17 | 18.57 |
|                 | 4H   | 17.81            | 18.84 | 18.24 | 19.26 | 19.69 | 17.38          | 18.42 | 17.81 | 18.83 | 19.27 |
|                 | 6H   | 18.40            | 19.31 | 18.86 | 19.75 | 20.20 | 17.97          | 18.87 | 18.42 | 19.32 | 19.77 |
|                 | 8H   | 18.59            | 19.44 | 19.05 | 19.88 | 20.35 | 18.15          | 19.00 | 18.61 | 19.44 | 19.91 |
|                 | 12H  | 18.72            | 19.48 | 19.20 | 19.96 | 20.43 | 18.27          | 19.03 | 18.75 | 19.51 | 19.98 |
| 8H              | 4H   | 18.08            | 18.93 | 18.54 | 19.37 | 19.83 | 17.70          | 18.55 | 18.17 | 18.99 | 19.46 |
|                 | 6H   | 18.79            | 19.50 | 19.29 | 19.98 | 20.46 | 18.41          | 19.11 | 18.91 | 19.60 | 20.08 |
|                 | 8H   | 19.05            | 19.68 | 19.56 | 20.19 | 20.68 | 18.66          | 19.29 | 19.17 | 19.80 | 20.28 |
|                 | 12H  | 19.25            | 19.81 | 19.76 | 20.30 | 20.86 | 18.84          | 19.40 | 19.35 | 19.89 | 20.45 |
| 12H             | 4H   | 18.11            | 18.87 | 18.59 | 19.34 | 19.81 | 17.74          | 18.50 | 18.22 | 18.98 | 19.45 |
|                 | 6H   | 18.84            | 19.47 | 19.35 | 19.98 | 20.46 | 18.47          | 19.10 | 18.98 | 19.61 | 20.09 |
|                 | 8H   | 19.15            | 19.71 | 19.66 | 20.20 | 20.76 | 18.77          | 19.33 | 19.28 | 19.82 | 20.38 |