

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: P930330

Luminaire Tested: DFN2DS-HX4F0-080DS835-RLL

Issue Date: 11/20/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P930330  
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-HX4F0-080DS835-RLL  
Description: 4 foot, Hexagon Define Geo, with Direct 1in Regressed Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

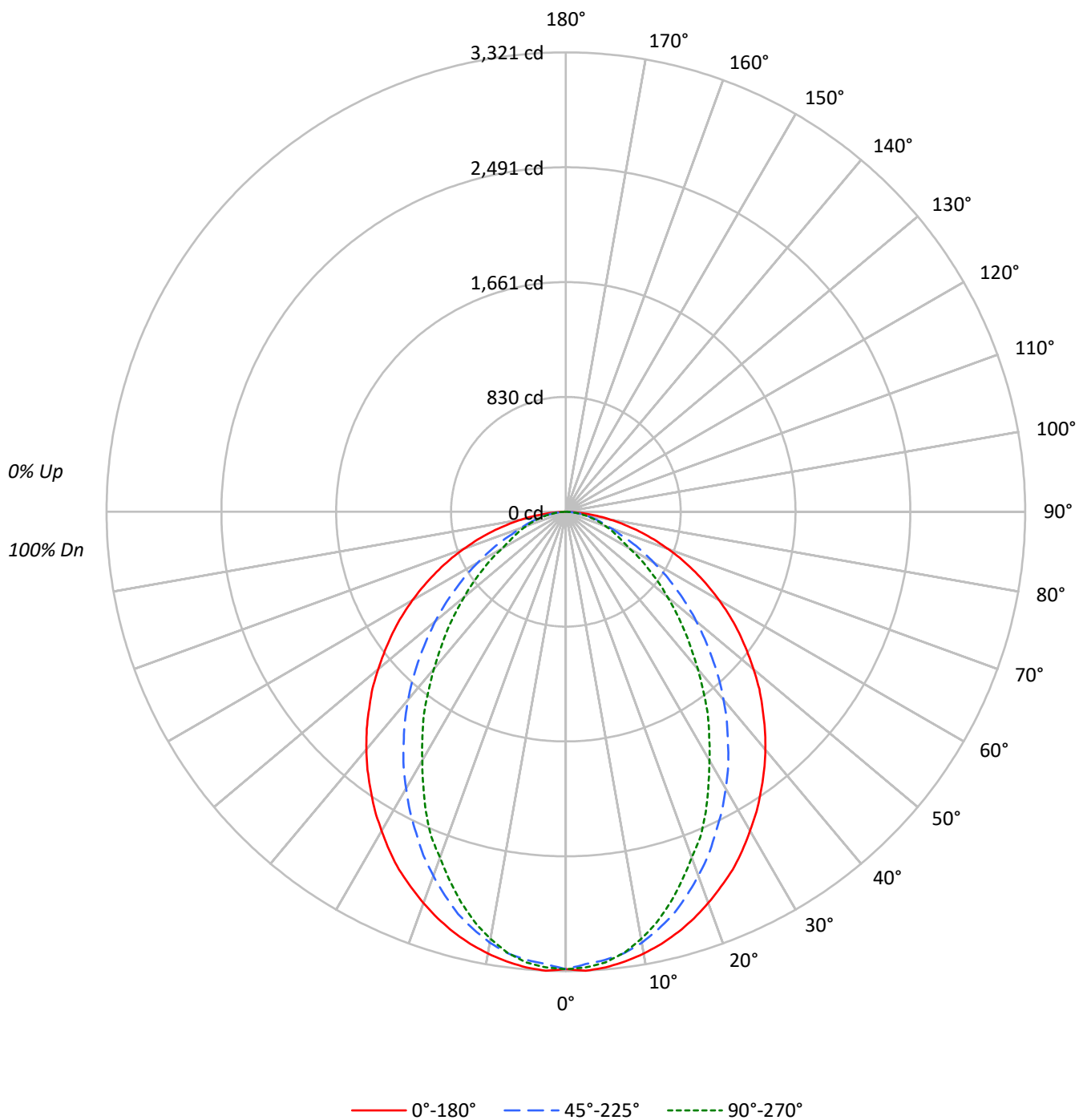
Lumens per Lamp: N/A  
Luminaire Lumens: 6800.0 lumens  
Efficiency: N/A  
Efficacy: 83.4 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular (W 4.09' x L: 3.54' x H: 0')  
CIE Type: Direct

Input Watts (W): 81.5  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9613  
Total Harmonic Distortion (THDi): 0.083  
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°  | 2459 | 2459 | 2459 |
| 5°  | 2468 | 2428 | 2441 |
| 10° | 2449 | 2388 | 2368 |
| 15° | 2421 | 2317 | 2250 |
| 20° | 2382 | 2216 | 2105 |
| 25° | 2342 | 2101 | 1964 |
| 30° | 2287 | 1983 | 1783 |
| 35° | 2233 | 1855 | 1624 |
| 40° | 2178 | 1722 | 1441 |
| 45° | 2114 | 1573 | 1274 |
| 50° | 2049 | 1423 | 1111 |
| 55° | 1982 | 1261 | 954  |
| 60° | 1904 | 1090 | 792  |
| 65° | 1816 | 916  | 721  |
| 70° | 1711 | 754  | 663  |
| 75° | 1582 | 688  | 619  |
| 80° | 1396 | 614  | 564  |
| 85° | 1097 | 485  | 485  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
Vertical Angle: 45°  
Luminance: 2114 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 309.9  | 4.6       |
| 10°-20°   | 850.7  | 12.5      |
| 20°-30°   | 1194.3 | 17.6      |
| 30°-40°   | 1301.9 | 19.1      |
| 40°-50°   | 1196.6 | 17.6      |
| 50°-60°   | 939.7  | 13.8      |
| 60°-70°   | 611.7  | 9.0       |
| 70°-80°   | 314.9  | 4.6       |
| 80°-90°   | 80.4   | 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°    | 2354.9 | 34.6      |
| 0°-40°    | 3656.8 | 53.8      |
| 0°-60°    | 5793.1 | 85.2      |
| 0°-90°    | 6800.0 | 100.0     |
| 90°-120°  | 0.0    | 0.0       |
| 90°-150°  | 0.0    | 0.0       |
| 90°-180°  | 0.0    | 0.0       |
| 0°-180°   | 6800.0 | 100.0     |

**CANDELA DISTRIBUTION:**

|     | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|-----|------|-------|------|-------|------|------|
| 0°  | 3306 | 3306  | 3306 | 3306  | 3306 |      |
| 5°  | 3306 | 3292  | 3252 | 3279  | 3270 | 314  |
| 15° | 3145 | 3112  | 3010 | 2953  | 2924 | 886  |
| 25° | 2855 | 2759  | 2561 | 2439  | 2394 | 1313 |
| 35° | 2460 | 2307  | 2044 | 1855  | 1789 | 1540 |
| 45° | 2011 | 1810  | 1496 | 1284  | 1212 | 1553 |
| 55° | 1529 | 1296  | 972  | 793   | 736  | 1366 |
| 65° | 1032 | 790   | 521  | 419   | 410  | 1024 |
| 75° | 550  | 341   | 239  | 218   | 216  | 582  |
| 85° | 129  | 66    | 57   | 57    | 57   | 154  |
| 90° | 0    | 0     | 0    | 0     | 0    |      |

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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|-------|--------|--------|--------|--------|--------|
| 0°    | 3306.4 | 3306.4 | 3306.4 | 3306.4 | 3306.4 |
| 2.5°  | 3321.3 | 3306.4 | 3273.4 | 3303.5 | 3297.5 |
| 5°    | 3306.4 | 3291.5 | 3252.4 | 3279.4 | 3270.5 |
| 7.5°  | 3279.4 | 3261.6 | 3219.7 | 3231.5 | 3216.5 |
| 10°   | 3243.5 | 3222.6 | 3162.9 | 3153.7 | 3135.9 |
| 12.5° | 3198.8 | 3171.8 | 3090.8 | 3073.0 | 3040.0 |
| 15°   | 3144.8 | 3111.8 | 3010.2 | 2953.4 | 2923.5 |
| 17.5° | 3081.9 | 3034.0 | 2908.3 | 2842.6 | 2794.6 |
| 20°   | 3010.2 | 2950.2 | 2800.7 | 2726.1 | 2660.0 |
| 22.5° | 2932.4 | 2863.5 | 2689.9 | 2588.3 | 2543.5 |
| 25°   | 2854.6 | 2758.8 | 2561.3 | 2438.8 | 2393.7 |
| 27.5° | 2761.9 | 2660.0 | 2441.6 | 2301.0 | 2232.1 |
| 30°   | 2663.2 | 2549.2 | 2309.9 | 2157.5 | 2076.5 |
| 32.5° | 2567.3 | 2429.6 | 2184.5 | 2004.8 | 1929.9 |
| 35°   | 2459.7 | 2307.0 | 2043.8 | 1855.3 | 1789.2 |
| 37.5° | 2354.9 | 2190.2 | 1912.1 | 1705.4 | 1630.8 |
| 40°   | 2244.2 | 2064.8 | 1774.3 | 1561.9 | 1484.1 |
| 42.5° | 2130.5 | 1939.1 | 1636.8 | 1415.3 | 1340.6 |
| 45°   | 2010.8 | 1810.2 | 1496.2 | 1283.5 | 1211.8 |
| 47.5° | 1897.2 | 1684.8 | 1361.6 | 1148.9 | 1083.2 |
| 50°   | 1771.4 | 1559.1 | 1229.9 | 1023.2 | 960.6  |
| 52.5° | 1648.6 | 1424.1 | 1104.1 | 906.7  | 849.9  |
| 55°   | 1528.9 | 1295.6 | 972.4  | 793.0  | 736.2  |
| 57.5° | 1406.4 | 1167.0 | 855.9  | 688.3  | 640.3  |
| 60°   | 1280.6 | 1041.3 | 733.0  | 580.6  | 532.7  |
| 62.5° | 1158.1 | 918.7  | 628.3  | 484.8  | 461.0  |
| 65°   | 1032.4 | 789.8  | 520.6  | 419.1  | 409.8  |
| 67.5° | 912.7  | 670.2  | 419.1  | 367.9  | 359.1  |
| 70°   | 787.0  | 553.7  | 347.0  | 317.1  | 305.1  |
| 72.5° | 667.3  | 445.7  | 290.2  | 266.4  | 260.3  |
| 75°   | 550.5  | 341.0  | 239.4  | 218.4  | 215.6  |
| 77.5° | 434.0  | 242.2  | 188.6  | 176.5  | 170.5  |
| 80°   | 326.0  | 173.7  | 143.5  | 131.7  | 131.7  |
| 82.5° | 227.3  | 116.8  | 98.7   | 92.7   | 92.7   |
| 85°   | 128.6  | 65.7   | 56.8   | 56.8   | 56.8   |
| 87.5° | 47.9   | 23.8   | 23.8   | 21.0   | 21.0   |
| 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 | 14.36            | 15.88 | 14.73 | 16.20 | 16.51 | 10.32          | 11.84 | 10.69 | 12.16 | 12.47 |
|                 | 3H   | 16.13            | 17.49 | 16.50 | 17.82 | 18.18 | 11.59          | 12.95 | 11.96 | 13.28 | 13.64 |
|                 | 4H   | 16.79            | 18.07 | 17.19 | 18.42 | 18.80 | 12.09          | 13.37 | 12.49 | 13.72 | 14.10 |
|                 | 6H   | 17.28            | 18.46 | 17.69 | 18.83 | 19.22 | 12.47          | 13.65 | 12.88 | 14.02 | 14.41 |
|                 | 8H   | 17.45            | 18.57 | 17.87 | 18.96 | 19.36 | 12.59          | 13.72 | 13.02 | 14.11 | 14.51 |
|                 | 12H  | 17.55            | 18.63 | 17.98 | 19.01 | 19.44 | 12.67          | 13.75 | 13.10 | 14.13 | 14.56 |
| 4H              | 2H   | 14.46            | 15.74 | 14.86 | 16.09 | 16.47 | 11.02          | 12.30 | 11.42 | 12.65 | 13.02 |
|                 | 3H   | 16.40            | 17.46 | 16.81 | 17.86 | 18.26 | 12.46          | 13.52 | 12.87 | 13.92 | 14.32 |
|                 | 4H   | 17.15            | 18.10 | 17.58 | 18.52 | 18.96 | 13.06          | 14.02 | 13.49 | 14.43 | 14.87 |
|                 | 6H   | 17.74            | 18.57 | 18.20 | 19.01 | 19.47 | 13.55          | 14.38 | 14.00 | 14.82 | 15.28 |
|                 | 8H   | 17.95            | 18.73 | 18.42 | 19.17 | 19.64 | 13.71          | 14.49 | 14.17 | 14.93 | 15.40 |
|                 | 12H  | 18.11            | 18.80 | 18.59 | 19.28 | 19.75 | 13.83          | 14.52 | 14.31 | 15.00 | 15.47 |
| 8H              | 4H   | 17.17            | 17.95 | 17.63 | 18.39 | 18.86 | 13.41          | 14.19 | 13.88 | 14.63 | 15.10 |
|                 | 6H   | 17.81            | 18.45 | 18.31 | 18.94 | 19.42 | 14.00          | 14.64 | 14.50 | 15.13 | 15.61 |
|                 | 8H   | 18.06            | 18.64 | 18.57 | 19.15 | 19.63 | 14.22          | 14.80 | 14.73 | 15.31 | 15.79 |
|                 | 12H  | 18.26            | 18.77 | 18.77 | 19.26 | 19.83 | 14.40          | 14.91 | 14.91 | 15.40 | 15.97 |
| 12H             | 4H   | 17.16            | 17.85 | 17.64 | 18.33 | 18.80 | 13.46          | 14.15 | 13.94 | 14.63 | 15.10 |
|                 | 6H   | 17.79            | 18.37 | 18.30 | 18.88 | 19.36 | 14.06          | 14.64 | 14.58 | 15.15 | 15.64 |
|                 | 8H   | 18.07            | 18.58 | 18.58 | 19.08 | 19.64 | 14.34          | 14.85 | 14.85 | 15.34 | 15.90 |