

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: P930184

Luminaire Tested: DFN2DS-HX3F0-060DS830-RLL

Issue Date: 11/20/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P930184  
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-HX3F0-060DS830-RLL  
Description: 3 foot, Hexagon Define Geo, with Direct 1in Regressed Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

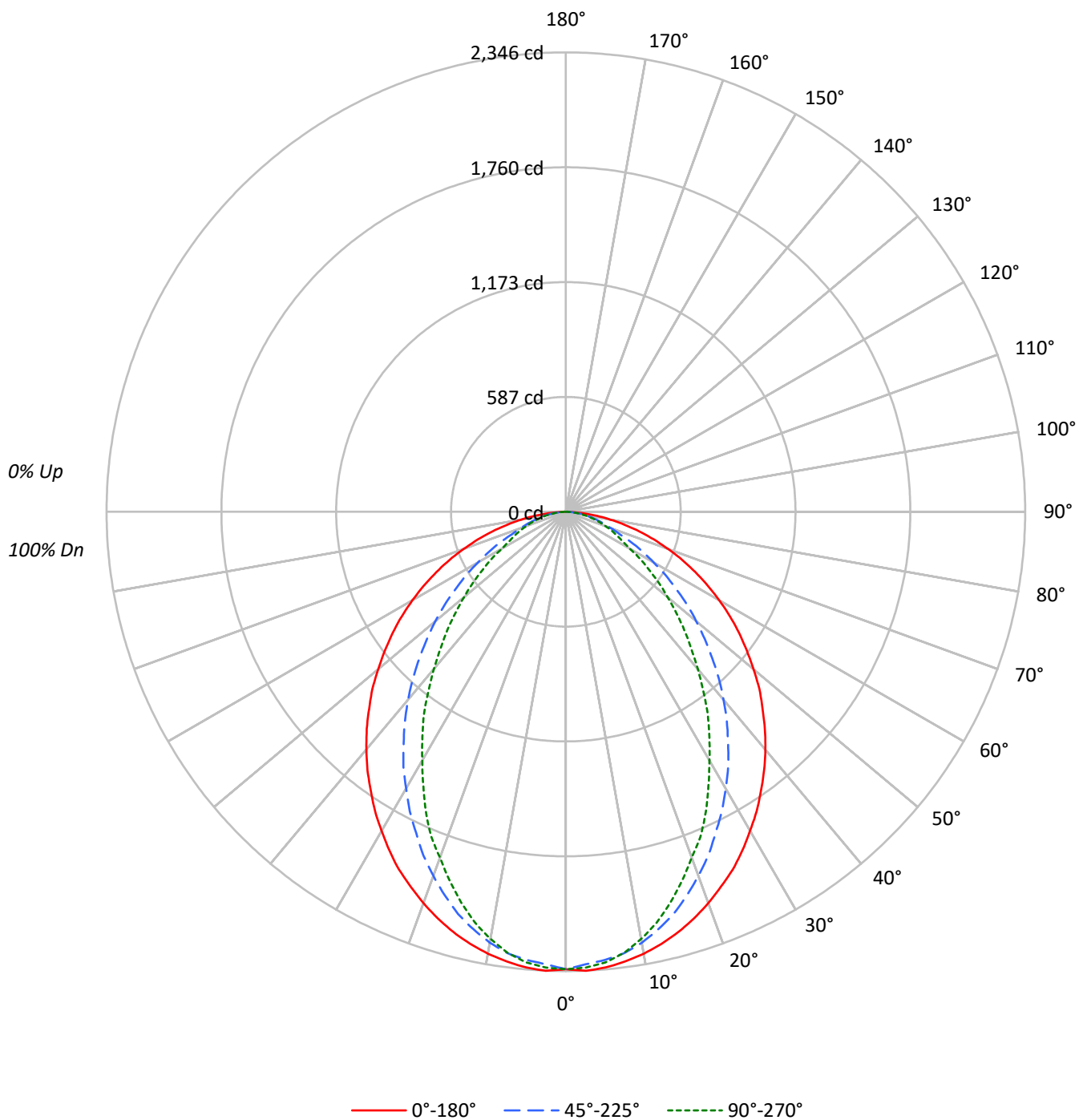
Lumens per Lamp: N/A  
Luminaire Lumens: 4804.2 lumens  
Efficiency: N/A  
Efficacy: 78.6 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular (W 3.28' x L: 2.84' x H: 0')  
CIE Type: Direct

Input Watts (W): 61.1  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9933  
Total Harmonic Distortion (THDi): 0.066  
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°  | 2706 | 2706 | 2706 |
| 5°  | 2716 | 2672 | 2687 |
| 10° | 2695 | 2628 | 2606 |
| 15° | 2664 | 2550 | 2477 |
| 20° | 2622 | 2439 | 2317 |
| 25° | 2578 | 2313 | 2162 |
| 30° | 2517 | 2183 | 1962 |
| 35° | 2457 | 2042 | 1788 |
| 40° | 2397 | 1895 | 1585 |
| 45° | 2327 | 1732 | 1402 |
| 50° | 2255 | 1566 | 1223 |
| 55° | 2181 | 1387 | 1050 |
| 60° | 2096 | 1200 | 872  |
| 65° | 1999 | 1008 | 794  |
| 70° | 1883 | 830  | 730  |
| 75° | 1741 | 757  | 682  |
| 80° | 1536 | 676  | 621  |
| 85° | 1207 | 533  | 533  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 2327 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 218.9  | 4.6       |
| 10°-20°   | 601.0  | 12.5      |
| 20°-30°   | 843.8  | 17.6      |
| 30°-40°   | 919.8  | 19.1      |
| 40°-50°   | 845.4  | 17.6      |
| 50°-60°   | 663.9  | 13.8      |
| 60°-70°   | 432.2  | 9.0       |
| 70°-80°   | 222.5  | 4.6       |
| 80°-90°   | 56.8   | 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°    | 1663.7 | 34.6      |
| 0°-40°    | 2583.5 | 53.8      |
| 0°-60°    | 4092.8 | 85.2      |
| 0°-90°    | 4804.2 | 100.0     |
| 90°-120°  | 0.0    | 0.0       |
| 90°-150°  | 0.0    | 0.0       |
| 90°-180°  | 0.0    | 0.0       |
| 0°-180°   | 4804.2 | 100.0     |

**CANDELA DISTRIBUTION:**

|     | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|-----|------|-------|------|-------|------|------|
| 0°  | 2336 | 2336  | 2336 | 2336  | 2336 |      |
| 5°  | 2336 | 2325  | 2298 | 2317  | 2311 | 221  |
| 15° | 2222 | 2198  | 2127 | 2086  | 2065 | 626  |
| 25° | 2017 | 1949  | 1810 | 1723  | 1691 | 928  |
| 35° | 1738 | 1630  | 1444 | 1311  | 1264 | 1088 |
| 45° | 1421 | 1279  | 1057 | 907   | 856  | 1097 |
| 55° | 1080 | 915   | 687  | 560   | 520  | 965  |
| 65° | 729  | 558   | 368  | 296   | 290  | 723  |
| 75° | 389  | 241   | 169  | 154   | 152  | 411  |
| 85° | 91   | 46    | 40   | 40    | 40   | 109  |
| 90° | 0    | 0     | 0    | 0     | 0    |      |

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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|-------|--------|--------|--------|--------|--------|
| 0°    | 2336.0 | 2336.0 | 2336.0 | 2336.0 | 2336.0 |
| 2.5°  | 2346.5 | 2336.0 | 2312.6 | 2333.9 | 2329.7 |
| 5°    | 2336.0 | 2325.4 | 2297.8 | 2316.9 | 2310.6 |
| 7.5°  | 2316.9 | 2304.3 | 2274.7 | 2283.0 | 2272.5 |
| 10°   | 2291.5 | 2276.7 | 2234.6 | 2228.1 | 2215.5 |
| 12.5° | 2260.0 | 2240.8 | 2183.7 | 2171.1 | 2147.8 |
| 15°   | 2221.8 | 2198.4 | 2126.7 | 2086.5 | 2065.4 |
| 17.5° | 2177.4 | 2143.5 | 2054.7 | 2008.2 | 1974.4 |
| 20°   | 2126.7 | 2084.3 | 1978.7 | 1925.9 | 1879.3 |
| 22.5° | 2071.7 | 2023.0 | 1900.4 | 1828.6 | 1797.0 |
| 25°   | 2016.8 | 1949.1 | 1809.6 | 1723.0 | 1691.2 |
| 27.5° | 1951.4 | 1879.3 | 1725.0 | 1625.6 | 1577.0 |
| 30°   | 1881.6 | 1801.0 | 1631.9 | 1524.3 | 1467.1 |
| 32.5° | 1813.8 | 1716.5 | 1543.4 | 1416.4 | 1363.5 |
| 35°   | 1737.8 | 1629.9 | 1444.0 | 1310.7 | 1264.1 |
| 37.5° | 1663.8 | 1547.3 | 1350.9 | 1204.9 | 1152.2 |
| 40°   | 1585.5 | 1458.8 | 1253.5 | 1103.5 | 1048.5 |
| 42.5° | 1505.2 | 1370.0 | 1156.4 | 999.8  | 947.2  |
| 45°   | 1420.6 | 1278.9 | 1057.1 | 906.8  | 856.1  |
| 47.5° | 1340.4 | 1190.3 | 962.0  | 811.7  | 765.3  |
| 50°   | 1251.5 | 1101.5 | 868.9  | 722.9  | 678.7  |
| 52.5° | 1164.7 | 1006.2 | 780.1  | 640.6  | 600.4  |
| 55°   | 1080.2 | 915.3  | 687.0  | 560.3  | 520.1  |
| 57.5° | 993.6  | 824.4  | 604.7  | 486.3  | 452.3  |
| 60°   | 904.8  | 735.7  | 517.9  | 410.2  | 376.3  |
| 62.5° | 818.2  | 649.1  | 443.9  | 342.5  | 325.6  |
| 65°   | 729.4  | 558.0  | 367.9  | 296.1  | 289.6  |
| 67.5° | 644.8  | 473.4  | 296.1  | 260.0  | 253.7  |
| 70°   | 556.0  | 391.1  | 245.1  | 224.1  | 215.5  |
| 72.5° | 471.5  | 314.9  | 205.0  | 188.2  | 183.9  |
| 75°   | 389.0  | 240.9  | 169.1  | 154.3  | 152.3  |
| 77.5° | 306.6  | 171.2  | 133.2  | 124.7  | 120.5  |
| 80°   | 230.3  | 122.6  | 101.4  | 93.1   | 93.1   |
| 82.5° | 160.6  | 82.5   | 69.7   | 65.5   | 65.5   |
| 85°   | 90.8   | 46.4   | 40.1   | 40.1   | 40.1   |
| 87.5° | 33.9   | 16.9   | 16.9   | 14.8   | 14.8   |
| 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 | 14.69            | 16.21 | 15.06 | 16.53 | 16.84 | 10.65          | 12.18 | 11.02 | 12.49 | 12.80 |
|                 | 3H   | 16.46            | 17.82 | 16.84 | 18.15 | 18.51 | 11.92          | 13.28 | 12.30 | 13.61 | 13.97 |
|                 | 4H   | 17.12            | 18.41 | 17.52 | 18.75 | 19.13 | 12.42          | 13.70 | 12.82 | 14.05 | 14.43 |
|                 | 6H   | 17.61            | 18.80 | 18.03 | 19.16 | 19.55 | 12.80          | 13.98 | 13.21 | 14.35 | 14.74 |
|                 | 8H   | 17.78            | 18.91 | 18.21 | 19.29 | 19.70 | 12.93          | 14.05 | 13.35 | 14.44 | 14.84 |
|                 | 12H  | 17.88            | 18.96 | 18.31 | 19.34 | 19.77 | 13.01          | 14.09 | 13.44 | 14.47 | 14.90 |
| 4H              | 2H   | 14.80            | 16.08 | 15.20 | 16.43 | 16.80 | 11.35          | 12.63 | 11.75 | 12.98 | 13.36 |
|                 | 3H   | 16.73            | 17.79 | 17.14 | 18.19 | 18.59 | 12.79          | 13.86 | 13.20 | 14.26 | 14.66 |
|                 | 4H   | 17.48            | 18.44 | 17.91 | 18.85 | 19.29 | 13.39          | 14.35 | 13.82 | 14.76 | 15.20 |
|                 | 6H   | 18.07            | 18.90 | 18.53 | 19.35 | 19.81 | 13.88          | 14.71 | 14.34 | 15.16 | 15.61 |
|                 | 8H   | 18.29            | 19.06 | 18.75 | 19.51 | 19.97 | 14.04          | 14.82 | 14.51 | 15.26 | 15.73 |
|                 | 12H  | 18.44            | 19.13 | 18.92 | 19.61 | 20.08 | 14.16          | 14.85 | 14.64 | 15.33 | 15.80 |
| 8H              | 4H   | 17.50            | 18.28 | 17.97 | 18.73 | 19.19 | 13.75          | 14.52 | 14.21 | 14.97 | 15.43 |
|                 | 6H   | 18.14            | 18.78 | 18.64 | 19.27 | 19.75 | 14.33          | 14.98 | 14.83 | 15.47 | 15.94 |
|                 | 8H   | 18.39            | 18.97 | 18.91 | 19.48 | 19.97 | 14.55          | 15.13 | 15.07 | 15.64 | 16.13 |
|                 | 12H  | 18.60            | 19.11 | 19.11 | 19.60 | 20.16 | 14.73          | 15.24 | 15.24 | 15.73 | 16.30 |
| 12H             | 4H   | 17.49            | 18.18 | 17.97 | 18.66 | 19.13 | 13.79          | 14.48 | 14.27 | 14.96 | 15.43 |
|                 | 6H   | 18.12            | 18.70 | 18.64 | 19.21 | 19.70 | 14.40          | 14.97 | 14.91 | 15.48 | 15.97 |
|                 | 8H   | 18.41            | 18.92 | 18.92 | 19.41 | 19.97 | 14.67          | 15.18 | 15.18 | 15.67 | 16.24 |