

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: P930293

Luminaire Tested: DFN2DS-HX4F0-060DS835-FLL

Issue Date: 11/20/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P930293  
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-HX4F0-060DS835-FLL  
Description: 4 foot, Hexagon Define Geo, with Direct Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

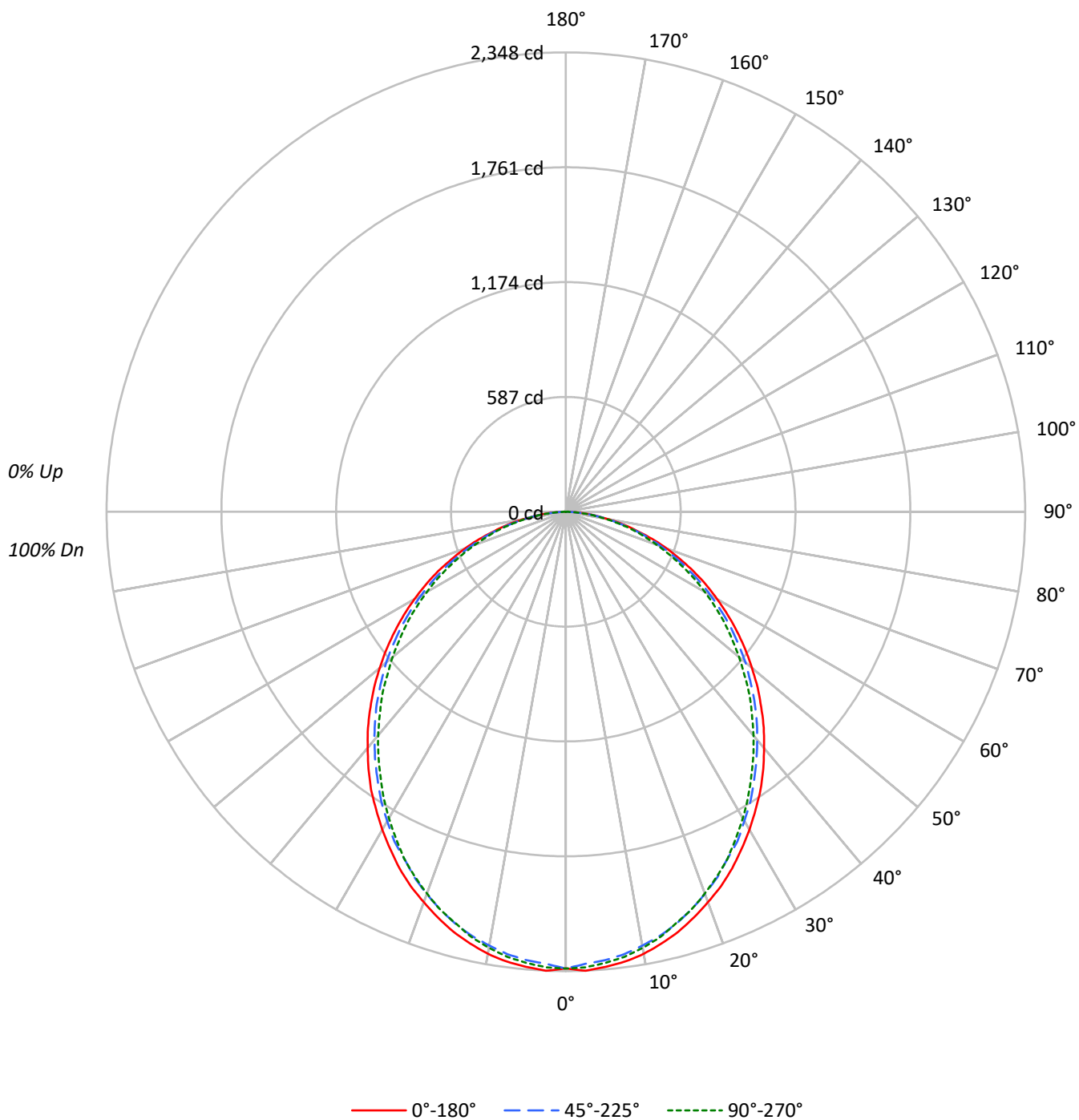
Lumens per Lamp: N/A  
Luminaire Lumens: 5940.0 lumens  
Efficiency: N/A  
Efficacy: 100.7 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
Luminous Opening: Rectangular (W 4.09' x L: 3.54' x H: 0')  
CIE Type: Direct

Input Watts (W): 59  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.099  
Total Harmonic Distortion (THDi): 0.979  
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°  | 1736 | 1736 | 1736 |
| 5°  | 1743 | 1717 | 1728 |
| 10° | 1732 | 1700 | 1709 |
| 15° | 1711 | 1678 | 1676 |
| 20° | 1680 | 1645 | 1643 |
| 25° | 1650 | 1604 | 1604 |
| 30° | 1611 | 1567 | 1554 |
| 35° | 1575 | 1522 | 1500 |
| 40° | 1530 | 1477 | 1449 |
| 45° | 1485 | 1433 | 1398 |
| 50° | 1436 | 1387 | 1337 |
| 55° | 1385 | 1333 | 1284 |
| 60° | 1329 | 1269 | 1222 |
| 65° | 1268 | 1205 | 1149 |
| 70° | 1191 | 1127 | 1074 |
| 75° | 1083 | 1038 | 1013 |
| 80° | 962  | 932  | 884  |
| 85° | 784  | 747  | 671  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 1485 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 219.7  | 3.7       |
| 10°-20°   | 618.3  | 10.4      |
| 20°-30°   | 908.6  | 15.3      |
| 30°-40°   | 1055.3 | 17.8      |
| 40°-50°   | 1054.0 | 17.7      |
| 50°-60°   | 919.0  | 15.5      |
| 60°-70°   | 679.4  | 11.4      |
| 70°-80°   | 384.4  | 6.5       |
| 80°-90°   | 101.4  | 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°    | 1746.6 | 29.4      |
| 0°-40°    | 2801.8 | 47.2      |
| 0°-60°    | 4774.8 | 80.4      |
| 0°-90°    | 5940.0 | 100.0     |
| 90°-120°  | 0.0    | 0.0       |
| 90°-150°  | 0.0    | 0.0       |
| 90°-180°  | 0.0    | 0.0       |
| 0°-180°   | 5940.0 | 100.0     |

**CANDELA DISTRIBUTION:**

|     | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|-----|------|-------|------|-------|------|------|
| 0°  | 2335 | 2335  | 2335 | 2335  | 2335 |      |
| 5°  | 2335 | 2326  | 2301 | 2319  | 2315 | 222  |
| 15° | 2222 | 2209  | 2180 | 2189  | 2178 | 626  |
| 25° | 2011 | 1994  | 1955 | 1960  | 1955 | 926  |
| 35° | 1735 | 1713  | 1677 | 1663  | 1652 | 1084 |
| 45° | 1412 | 1396  | 1363 | 1338  | 1329 | 1090 |
| 55° | 1069 | 1055  | 1028 | 1001  | 990  | 955  |
| 65° | 721  | 707   | 685  | 664   | 653  | 713  |
| 75° | 377  | 373   | 361  | 348   | 352  | 402  |
| 85° | 92   | 90    | 88   | 81    | 79   | 108  |
| 90° | 0    | 0     | 0    | 0     | 0    |      |

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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|-------|--------|--------|--------|--------|--------|
| 0°    | 2334.6 | 2334.6 | 2334.6 | 2334.6 | 2334.6 |
| 2.5°  | 2348.2 | 2337.0 | 2312.2 | 2334.6 | 2330.3 |
| 5°    | 2334.6 | 2325.8 | 2301.0 | 2318.9 | 2314.6 |
| 7.5°  | 2318.9 | 2305.6 | 2280.8 | 2298.9 | 2294.4 |
| 10°   | 2294.4 | 2278.7 | 2251.7 | 2269.6 | 2262.9 |
| 12.5° | 2260.6 | 2247.2 | 2220.3 | 2231.5 | 2227.0 |
| 15°   | 2222.4 | 2209.1 | 2179.8 | 2188.9 | 2177.7 |
| 17.5° | 2175.3 | 2162.0 | 2132.7 | 2143.8 | 2132.7 |
| 20°   | 2123.6 | 2110.3 | 2078.8 | 2085.5 | 2076.7 |
| 22.5° | 2072.2 | 2051.9 | 2022.6 | 2022.6 | 2018.1 |
| 25°   | 2011.4 | 1993.6 | 1955.4 | 1959.7 | 1955.4 |
| 27.5° | 1944.0 | 1928.3 | 1899.2 | 1892.6 | 1881.4 |
| 30°   | 1876.9 | 1858.7 | 1825.2 | 1818.5 | 1809.4 |
| 32.5° | 1804.9 | 1791.6 | 1755.6 | 1742.0 | 1733.0 |
| 35°   | 1735.4 | 1713.0 | 1677.0 | 1663.4 | 1652.2 |
| 37.5° | 1656.8 | 1636.5 | 1600.6 | 1584.8 | 1573.6 |
| 40°   | 1576.0 | 1557.9 | 1522.0 | 1502.0 | 1492.9 |
| 42.5° | 1497.4 | 1479.3 | 1443.6 | 1421.0 | 1407.6 |
| 45°   | 1412.2 | 1396.4 | 1362.6 | 1338.1 | 1329.0 |
| 47.5° | 1329.0 | 1313.3 | 1277.4 | 1252.6 | 1239.2 |
| 50°   | 1241.4 | 1230.2 | 1198.8 | 1167.3 | 1156.1 |
| 52.5° | 1156.1 | 1140.4 | 1111.3 | 1086.6 | 1070.9 |
| 55°   | 1068.7 | 1055.1 | 1028.2 | 1001.3 | 990.1  |
| 57.5° | 981.1  | 969.9  | 940.6  | 913.7  | 904.6  |
| 60°   | 893.4  | 884.6  | 853.2  | 828.4  | 821.7  |
| 62.5° | 808.1  | 792.4  | 770.0  | 747.6  | 738.6  |
| 65°   | 720.7  | 707.2  | 684.8  | 664.5  | 653.3  |
| 67.5° | 630.9  | 619.5  | 599.5  | 583.8  | 574.7  |
| 70°   | 547.8  | 538.8  | 518.5  | 502.8  | 494.0  |
| 72.5° | 462.5  | 453.5  | 442.3  | 426.6  | 419.9  |
| 75°   | 377.0  | 372.8  | 361.3  | 348.0  | 352.5  |
| 77.5° | 300.8  | 291.8  | 287.2  | 280.6  | 273.9  |
| 80°   | 224.6  | 222.2  | 217.7  | 211.0  | 206.5  |
| 82.5° | 152.7  | 152.7  | 150.5  | 141.5  | 141.5  |
| 85°   | 91.9   | 89.8   | 87.6   | 80.7   | 78.6   |
| 87.5° | 40.5   | 36.0   | 31.4   | 24.8   | 22.4   |
| 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 | 13.20            | 14.81 | 13.56 | 15.12 | 15.44 | 12.75          | 14.37 | 13.12 | 14.68 | 14.99 |
|                 | 3H   | 14.95            | 16.40 | 15.33 | 16.73 | 17.09 | 14.46          | 15.91 | 14.83 | 16.24 | 16.60 |
|                 | 4H   | 15.60            | 16.96 | 15.99 | 17.31 | 17.69 | 15.10          | 16.47 | 15.50 | 16.82 | 17.19 |
|                 | 6H   | 16.06            | 17.33 | 16.48 | 17.70 | 18.09 | 15.56          | 16.83 | 15.97 | 17.20 | 17.59 |
|                 | 8H   | 16.21            | 17.42 | 16.63 | 17.81 | 18.21 | 15.70          | 16.92 | 16.13 | 17.30 | 17.70 |
|                 | 12H  | 16.30            | 17.46 | 16.73 | 17.84 | 18.27 | 15.79          | 16.95 | 16.22 | 17.33 | 17.76 |
| 4H              | 2H   | 13.76            | 15.13 | 14.16 | 15.48 | 15.85 | 13.41          | 14.78 | 13.81 | 15.12 | 15.50 |
|                 | 3H   | 15.73            | 16.88 | 16.14 | 17.28 | 17.68 | 15.33          | 16.47 | 15.74 | 16.87 | 17.27 |
|                 | 4H   | 16.51            | 17.55 | 16.94 | 17.96 | 18.40 | 16.09          | 17.12 | 16.52 | 17.54 | 17.97 |
|                 | 6H   | 17.11            | 18.01 | 17.56 | 18.45 | 18.91 | 16.68          | 17.58 | 17.13 | 18.02 | 18.48 |
|                 | 8H   | 17.30            | 18.14 | 17.76 | 18.59 | 19.05 | 16.86          | 17.71 | 17.32 | 18.15 | 18.61 |
|                 | 12H  | 17.43            | 18.19 | 17.91 | 18.66 | 19.13 | 16.98          | 17.74 | 17.46 | 18.21 | 18.68 |
| 8H              | 4H   | 16.78            | 17.63 | 17.25 | 18.07 | 18.54 | 16.41          | 17.26 | 16.87 | 17.70 | 18.16 |
|                 | 6H   | 17.50            | 18.20 | 17.99 | 18.69 | 19.17 | 17.12          | 17.82 | 17.61 | 18.31 | 18.78 |
|                 | 8H   | 17.76            | 18.39 | 18.27 | 18.90 | 19.38 | 17.37          | 18.00 | 17.88 | 18.50 | 18.99 |
|                 | 12H  | 17.96            | 18.52 | 18.46 | 19.01 | 19.57 | 17.54          | 18.10 | 18.05 | 18.59 | 19.15 |
| 12H             | 4H   | 16.81            | 17.57 | 17.29 | 18.05 | 18.52 | 16.45          | 17.21 | 16.93 | 17.68 | 18.15 |
|                 | 6H   | 17.54            | 18.18 | 18.05 | 18.68 | 19.17 | 17.18          | 17.81 | 17.68 | 18.31 | 18.80 |
|                 | 8H   | 17.86            | 18.42 | 18.36 | 18.91 | 19.47 | 17.48          | 18.04 | 17.99 | 18.53 | 19.09 |