

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: P930671

Luminaire Tested: DFN2DS-PN4F0-060DS835-FLL

Issue Date: 11/20/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P930671  
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-PN4F0-060DS835-FLL  
Description: 4 foot, Pentagon Define Geo, with Direct Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

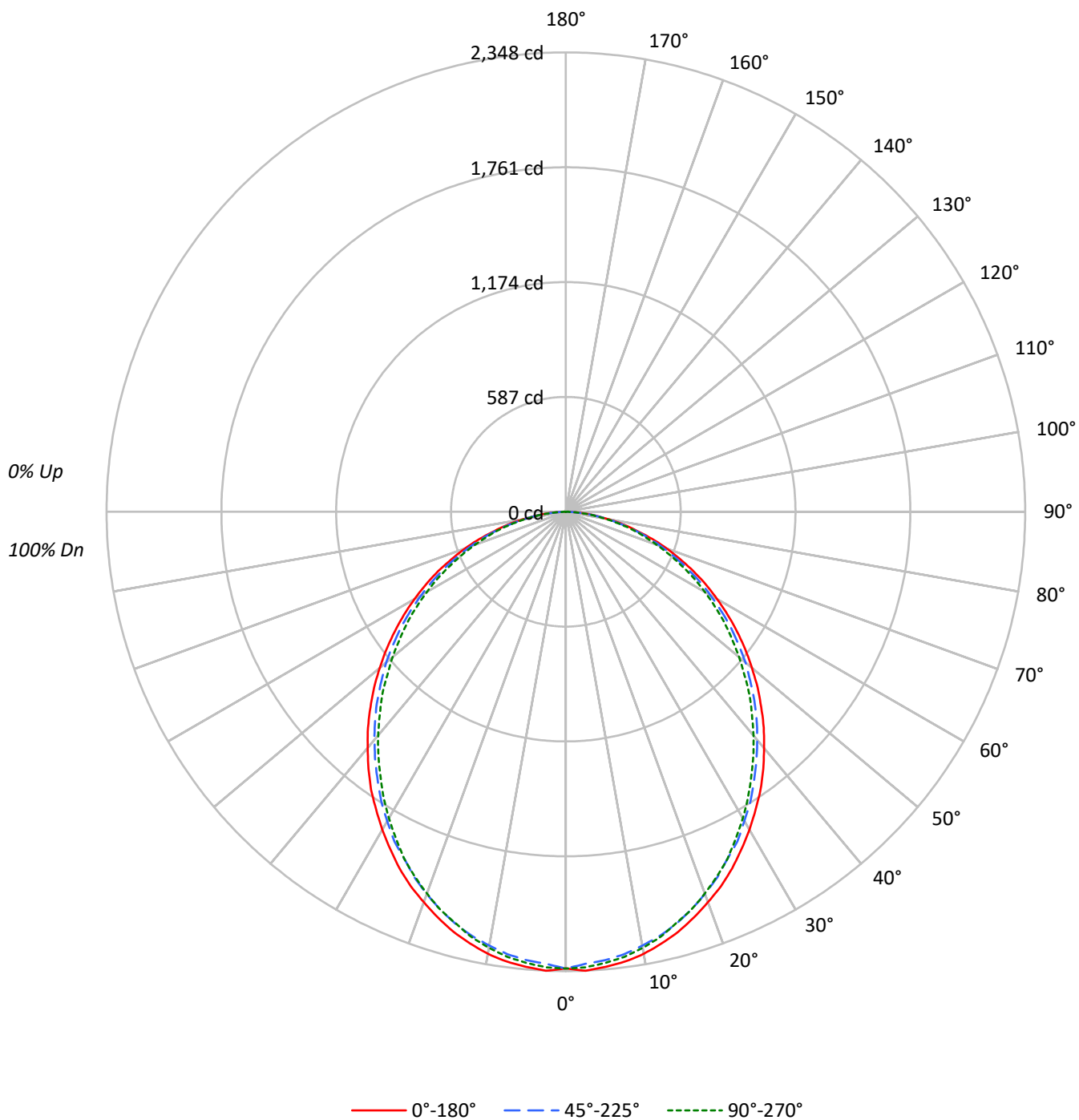
Lumens per Lamp: N/A  
Luminaire Lumens: 5940.0 lumens  
Efficiency: N/A  
Efficacy: 100.2 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
Luminous Opening: Rectangular (W 3.94' x L: 3.74' x H: 0')  
CIE Type: Direct

Input Watts (W): 59.3  
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   | 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°  | 1704 | 1704 | 1704 |
| 5°  | 1711 | 1686 | 1696 |
| 10° | 1701 | 1669 | 1677 |
| 15° | 1679 | 1647 | 1646 |
| 20° | 1650 | 1615 | 1613 |
| 25° | 1620 | 1575 | 1575 |
| 30° | 1582 | 1538 | 1525 |
| 35° | 1546 | 1494 | 1472 |
| 40° | 1502 | 1450 | 1423 |
| 45° | 1458 | 1407 | 1372 |
| 50° | 1410 | 1361 | 1313 |
| 55° | 1360 | 1309 | 1260 |
| 60° | 1304 | 1246 | 1200 |
| 65° | 1245 | 1183 | 1128 |
| 70° | 1169 | 1107 | 1054 |
| 75° | 1063 | 1019 | 994  |
| 80° | 944  | 915  | 868  |
| 85° | 770  | 734  | 658  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 1458 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 | 13.14            | 14.75 | 13.50 | 15.06 | 15.37 | 12.69          | 14.30 | 13.06 | 14.62 | 14.93 |
|                 | 3H   | 14.88            | 16.34 | 15.26 | 16.67 | 17.03 | 14.39          | 15.85 | 14.77 | 16.17 | 16.54 |
|                 | 4H   | 15.53            | 16.90 | 15.93 | 17.25 | 17.62 | 15.04          | 16.41 | 15.43 | 16.75 | 17.13 |
|                 | 6H   | 16.00            | 17.27 | 16.41 | 17.63 | 18.02 | 15.50          | 16.77 | 15.91 | 17.13 | 17.52 |
|                 | 8H   | 16.14            | 17.35 | 16.57 | 17.74 | 18.14 | 15.64          | 16.85 | 16.07 | 17.24 | 17.64 |
|                 | 12H  | 16.23            | 17.39 | 16.66 | 17.78 | 18.20 | 15.72          | 16.88 | 16.15 | 17.26 | 17.69 |
| 4H              | 2H   | 13.70            | 15.06 | 14.09 | 15.41 | 15.79 | 13.34          | 14.71 | 13.74 | 15.06 | 15.44 |
|                 | 3H   | 15.67            | 16.82 | 16.08 | 17.21 | 17.61 | 15.26          | 16.41 | 15.67 | 16.81 | 17.21 |
|                 | 4H   | 16.45            | 17.48 | 16.88 | 17.90 | 18.33 | 16.02          | 17.06 | 16.45 | 17.47 | 17.91 |
|                 | 6H   | 17.04            | 17.95 | 17.50 | 18.39 | 18.85 | 16.61          | 17.52 | 17.07 | 17.96 | 18.41 |
|                 | 8H   | 17.23            | 18.08 | 17.69 | 18.52 | 18.99 | 16.79          | 17.64 | 17.26 | 18.08 | 18.55 |
|                 | 12H  | 17.36            | 18.12 | 17.84 | 18.60 | 19.07 | 16.91          | 17.67 | 17.39 | 18.15 | 18.62 |
| 8H              | 4H   | 16.72            | 17.57 | 17.18 | 18.01 | 18.47 | 16.35          | 17.19 | 16.81 | 17.64 | 18.10 |
|                 | 6H   | 17.43            | 18.14 | 17.93 | 18.63 | 19.10 | 17.05          | 17.76 | 17.55 | 18.24 | 18.72 |
|                 | 8H   | 17.69            | 18.32 | 18.20 | 18.83 | 19.32 | 17.30          | 17.93 | 17.81 | 18.44 | 18.93 |
|                 | 12H  | 17.89            | 18.45 | 18.40 | 18.94 | 19.50 | 17.48          | 18.04 | 17.99 | 18.53 | 19.09 |
| 12H             | 4H   | 16.75            | 17.51 | 17.23 | 17.98 | 18.45 | 16.38          | 17.14 | 16.86 | 17.62 | 18.09 |
|                 | 6H   | 17.48            | 18.11 | 17.99 | 18.62 | 19.10 | 17.11          | 17.74 | 17.62 | 18.25 | 18.74 |
|                 | 8H   | 17.79            | 18.35 | 18.30 | 18.84 | 19.40 | 17.42          | 17.97 | 17.92 | 18.46 | 19.03 |