

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: P929925

Luminaire Tested: DFN2DS-4P3F0-060DS935-FLL

Issue Date: 11/20/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P929925  
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-4P3F0-060DS935-FLL  
Description: 3 foot, 90deg - 4way Define Geo, with Direct Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

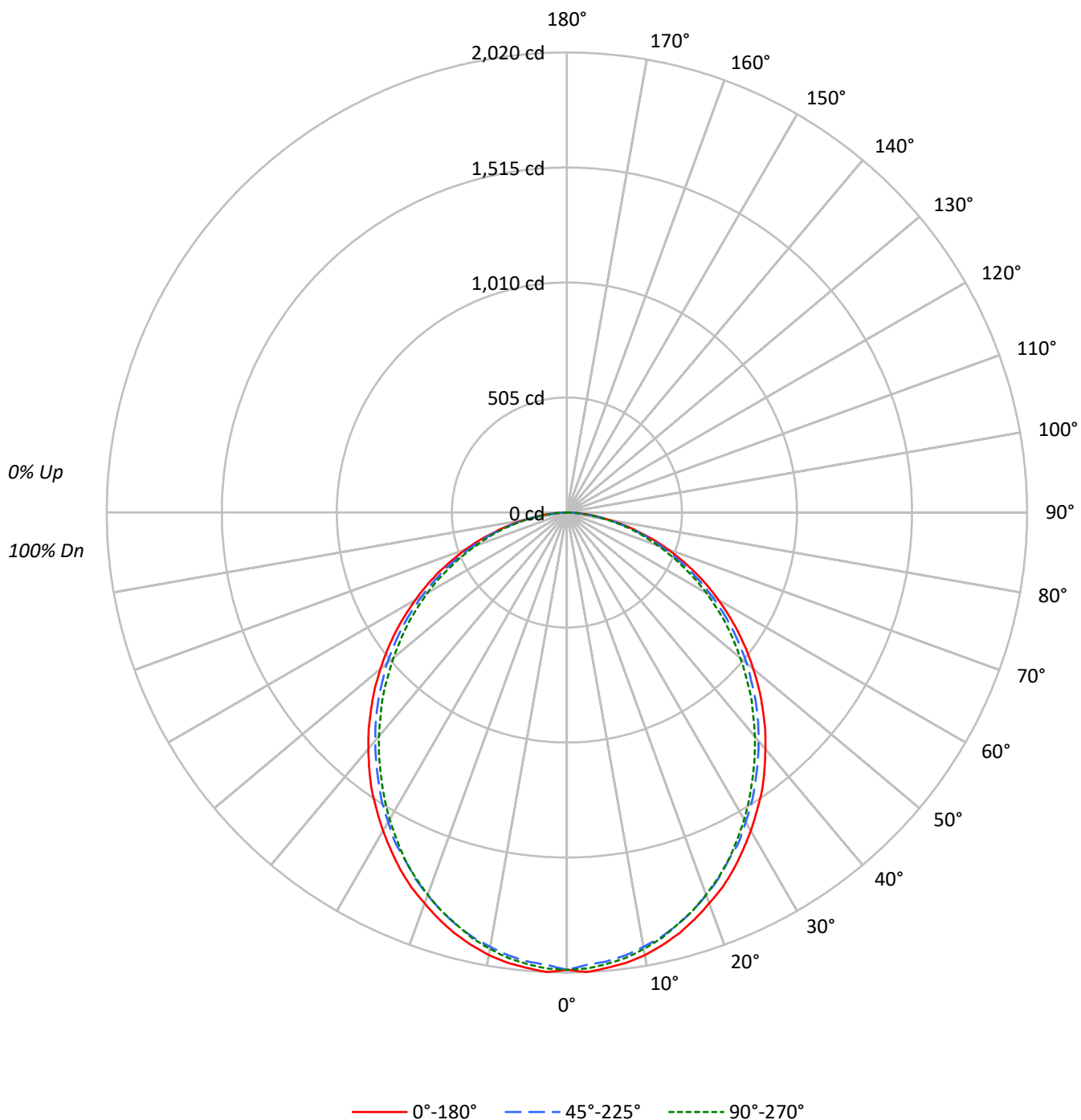
Lumens per Lamp: N/A  
Luminaire Lumens: 5108.4 lumens  
Efficiency: N/A  
Efficacy: 78.6 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
Luminous Opening: Rectangular (W 3.07' x L: 3.07' x H: 0')  
CIE Type: Direct

Input Watts (W): 65  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9963  
Total Harmonic Distortion (THDi): 0.065  
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  | 30  | 10  | 50  | 30  | 10  |
| RCR |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| 0   | 119 | 119 | 119 | 119 | 116 | 116 | 116 | 116 | 111 | 111 | 111 | 106 | 106 | 106 | 102 | 102 | 102 | 102 | 102 | 100 |
| 1   | 109 | 104 | 100 | 96  | 106 | 102 | 98  | 95  | 98  | 95  | 92  | 94  | 91  | 89  | 90  | 88  | 86  | 86  | 86  | 84  |
| 2   | 99  | 91  | 85  | 79  | 97  | 89  | 83  | 78  | 86  | 81  | 76  | 83  | 78  | 74  | 80  | 76  | 73  | 73  | 73  | 71  |
| 3   | 91  | 80  | 72  | 66  | 88  | 79  | 71  | 65  | 76  | 69  | 64  | 73  | 68  | 63  | 71  | 66  | 62  | 62  | 62  | 60  |
| 4   | 83  | 71  | 63  | 56  | 81  | 70  | 62  | 56  | 68  | 61  | 55  | 65  | 59  | 54  | 63  | 58  | 54  | 54  | 54  | 51  |
| 5   | 77  | 64  | 55  | 49  | 75  | 63  | 55  | 48  | 61  | 53  | 48  | 59  | 52  | 47  | 57  | 51  | 47  | 47  | 47  | 45  |
| 6   | 71  | 58  | 49  | 43  | 69  | 57  | 48  | 42  | 55  | 48  | 42  | 53  | 47  | 42  | 52  | 46  | 41  | 41  | 41  | 39  |
| 7   | 66  | 52  | 44  | 38  | 64  | 52  | 43  | 38  | 50  | 43  | 37  | 49  | 42  | 37  | 47  | 41  | 37  | 37  | 37  | 35  |
| 8   | 61  | 48  | 40  | 34  | 60  | 47  | 39  | 34  | 46  | 39  | 33  | 45  | 38  | 33  | 44  | 38  | 33  | 33  | 33  | 31  |
| 9   | 57  | 44  | 36  | 30  | 56  | 43  | 36  | 30  | 42  | 35  | 30  | 41  | 35  | 30  | 40  | 34  | 30  | 30  | 30  | 28  |
| 10  | 54  | 41  | 33  | 28  | 53  | 40  | 33  | 28  | 39  | 32  | 27  | 38  | 32  | 27  | 37  | 32  | 27  | 27  | 27  | 26  |

**AVERAGE LUMINANCE (cd/sqm):**

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 2288 | 2288 | 2288 |
| 5°  | 2297 | 2264 | 2277 |
| 10° | 2283 | 2241 | 2252 |
| 15° | 2255 | 2212 | 2210 |
| 20° | 2215 | 2168 | 2166 |
| 25° | 2175 | 2114 | 2114 |
| 30° | 2124 | 2066 | 2048 |
| 35° | 2076 | 2006 | 1977 |
| 40° | 2016 | 1947 | 1910 |
| 45° | 1957 | 1889 | 1842 |
| 50° | 1893 | 1828 | 1763 |
| 55° | 1826 | 1757 | 1692 |
| 60° | 1751 | 1672 | 1611 |
| 65° | 1671 | 1588 | 1515 |
| 70° | 1570 | 1486 | 1415 |
| 75° | 1427 | 1368 | 1335 |
| 80° | 1268 | 1229 | 1166 |
| 85° | 1033 | 985  | 884  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
Vertical Angle: 45°  
Luminance: 1957 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 189.0  | 3.7       |
| 10°-20°   | 531.7  | 10.4      |
| 20°-30°   | 781.4  | 15.3      |
| 30°-40°   | 907.5  | 17.8      |
| 40°-50°   | 906.4  | 17.7      |
| 50°-60°   | 790.4  | 15.5      |
| 60°-70°   | 584.3  | 11.4      |
| 70°-80°   | 330.6  | 6.5       |
| 80°-90°   | 87.2   | 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°    | 1502.1 | 29.4      |
| 0°-40°    | 2409.6 | 47.2      |
| 0°-60°    | 4106.3 | 80.4      |
| 0°-90°    | 5108.4 | 100.0     |
| 90°-120°  | 0.0    | 0.0       |
| 90°-150°  | 0.0    | 0.0       |
| 90°-180°  | 0.0    | 0.0       |
| 0°-180°   | 5108.4 | 100.0     |

**CANDELA DISTRIBUTION:**

|     | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|-----|------|-------|------|-------|------|------|
| 0°  | 2008 | 2008  | 2008 | 2008  | 2008 |      |
| 5°  | 2008 | 2000  | 1979 | 1994  | 1991 | 191  |
| 15° | 1911 | 1900  | 1875 | 1882  | 1873 | 538  |
| 25° | 1730 | 1714  | 1682 | 1685  | 1682 | 796  |
| 35° | 1492 | 1473  | 1442 | 1430  | 1421 | 932  |
| 45° | 1214 | 1201  | 1172 | 1151  | 1143 | 937  |
| 55° | 919  | 907   | 884  | 861   | 852  | 822  |
| 65° | 620  | 608   | 589  | 572   | 562  | 613  |
| 75° | 324  | 321   | 311  | 299   | 303  | 346  |
| 85° | 79   | 77    | 75   | 69    | 68   | 93   |
| 90° | 0    | 0     | 0    | 0     | 0    |      |

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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|-------|--------|--------|--------|--------|--------|
| 0°    | 2007.8 | 2007.8 | 2007.8 | 2007.8 | 2007.8 |
| 2.5°  | 2019.5 | 2009.8 | 1988.5 | 2007.8 | 2004.1 |
| 5°    | 2007.8 | 2000.2 | 1978.9 | 1994.3 | 1990.6 |
| 7.5°  | 1994.3 | 1982.8 | 1961.5 | 1977.1 | 1973.2 |
| 10°   | 1973.2 | 1959.7 | 1936.5 | 1951.9 | 1946.1 |
| 12.5° | 1944.1 | 1932.6 | 1909.5 | 1919.1 | 1915.2 |
| 15°   | 1911.3 | 1899.8 | 1874.6 | 1882.5 | 1872.8 |
| 17.5° | 1870.8 | 1859.3 | 1834.1 | 1843.7 | 1834.1 |
| 20°   | 1826.3 | 1814.9 | 1787.8 | 1793.5 | 1786.0 |
| 22.5° | 1782.1 | 1764.6 | 1739.4 | 1739.4 | 1735.6 |
| 25°   | 1729.8 | 1714.5 | 1681.6 | 1685.3 | 1681.6 |
| 27.5° | 1671.8 | 1658.3 | 1633.3 | 1627.6 | 1618.0 |
| 30°   | 1614.1 | 1598.5 | 1569.7 | 1563.9 | 1556.1 |
| 32.5° | 1552.2 | 1540.8 | 1509.8 | 1498.1 | 1490.4 |
| 35°   | 1492.4 | 1473.2 | 1442.2 | 1430.5 | 1420.9 |
| 37.5° | 1424.8 | 1407.4 | 1376.5 | 1362.9 | 1353.3 |
| 40°   | 1355.4 | 1339.8 | 1308.9 | 1291.7 | 1283.9 |
| 42.5° | 1287.8 | 1272.2 | 1241.5 | 1222.1 | 1210.5 |
| 45°   | 1214.5 | 1200.9 | 1171.8 | 1150.8 | 1142.9 |
| 47.5° | 1142.9 | 1129.4 | 1098.6 | 1077.2 | 1065.7 |
| 50°   | 1067.6 | 1058.0 | 1031.0 | 1003.9 | 994.2  |
| 52.5° | 994.2  | 980.7  | 955.7  | 934.5  | 921.0  |
| 55°   | 919.1  | 907.4  | 884.3  | 861.1  | 851.5  |
| 57.5° | 843.7  | 834.1  | 808.9  | 785.8  | 778.0  |
| 60°   | 768.3  | 760.8  | 733.8  | 712.4  | 706.7  |
| 62.5° | 695.0  | 681.5  | 662.2  | 642.9  | 635.2  |
| 65°   | 619.8  | 608.2  | 588.9  | 571.5  | 561.8  |
| 67.5° | 542.6  | 532.8  | 515.6  | 502.1  | 494.2  |
| 70°   | 471.1  | 463.4  | 445.9  | 432.4  | 424.8  |
| 72.5° | 397.8  | 390.0  | 380.4  | 366.9  | 361.1  |
| 75°   | 324.2  | 320.6  | 310.7  | 299.3  | 303.2  |
| 77.5° | 258.7  | 250.9  | 247.0  | 241.3  | 235.6  |
| 80°   | 193.2  | 191.1  | 187.2  | 181.5  | 177.6  |
| 82.5° | 131.3  | 131.3  | 129.4  | 121.7  | 121.7  |
| 85°   | 79.0   | 77.2   | 75.3   | 69.4   | 67.6   |
| 87.5° | 34.8   | 31.0   | 27.0   | 21.3   | 19.3   |
| 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 | 14.16            | 15.77 | 14.52 | 16.08 | 16.40 | 13.71          | 15.33 | 14.08 | 15.64 | 15.95 |
|                 | 3H   | 15.91            | 17.36 | 16.29 | 17.69 | 18.05 | 15.42          | 16.87 | 15.79 | 17.20 | 17.56 |
|                 | 4H   | 16.55            | 17.92 | 16.95 | 18.27 | 18.65 | 16.06          | 17.43 | 16.46 | 17.78 | 18.15 |
|                 | 6H   | 17.02            | 18.29 | 17.43 | 18.66 | 19.05 | 16.52          | 17.79 | 16.93 | 18.16 | 18.55 |
|                 | 8H   | 17.17            | 18.38 | 17.59 | 18.77 | 19.17 | 16.66          | 17.88 | 17.09 | 18.26 | 18.66 |
|                 | 12H  | 17.26            | 18.42 | 17.69 | 18.80 | 19.23 | 16.75          | 17.91 | 17.17 | 18.29 | 18.72 |
| 4H              | 2H   | 14.72            | 16.09 | 15.12 | 16.44 | 16.81 | 14.37          | 15.74 | 14.76 | 16.08 | 16.46 |
|                 | 3H   | 16.69            | 17.84 | 17.10 | 18.24 | 18.64 | 16.29          | 17.43 | 16.70 | 17.83 | 18.23 |
|                 | 4H   | 17.47            | 18.51 | 17.90 | 18.92 | 19.36 | 17.05          | 18.08 | 17.48 | 18.50 | 18.93 |
|                 | 6H   | 18.07            | 18.97 | 18.52 | 19.41 | 19.87 | 17.63          | 18.54 | 18.09 | 18.98 | 19.44 |
|                 | 8H   | 18.26            | 19.10 | 18.72 | 19.55 | 20.01 | 17.82          | 18.67 | 18.28 | 19.11 | 19.57 |
|                 | 12H  | 18.39            | 19.15 | 18.87 | 19.62 | 20.09 | 17.94          | 18.70 | 18.42 | 19.17 | 19.64 |
| 8H              | 4H   | 17.74            | 18.59 | 18.20 | 19.03 | 19.50 | 17.37          | 18.22 | 17.83 | 18.66 | 19.12 |
|                 | 6H   | 18.46            | 19.16 | 18.95 | 19.65 | 20.12 | 18.08          | 18.78 | 18.57 | 19.27 | 19.74 |
|                 | 8H   | 18.72            | 19.35 | 19.23 | 19.85 | 20.34 | 18.33          | 18.96 | 18.84 | 19.46 | 19.95 |
|                 | 12H  | 18.92            | 19.47 | 19.42 | 19.97 | 20.53 | 18.50          | 19.06 | 19.01 | 19.55 | 20.11 |
| 12H             | 4H   | 17.77            | 18.53 | 18.25 | 19.01 | 19.47 | 17.41          | 18.17 | 17.89 | 18.64 | 19.11 |
|                 | 6H   | 18.50            | 19.14 | 19.01 | 19.64 | 20.13 | 18.13          | 18.77 | 18.64 | 19.27 | 19.76 |
|                 | 8H   | 18.82            | 19.38 | 19.32 | 19.87 | 20.43 | 18.44          | 19.00 | 18.95 | 19.49 | 20.05 |