

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: P930289

Luminaire Tested: DFN2DS-HX4F0-050DS950-FLL

Issue Date: 11/20/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P930289  
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-HX4F0-050DS950-FLL  
Description: 4 foot, Hexagon Define Geo, with Direct Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

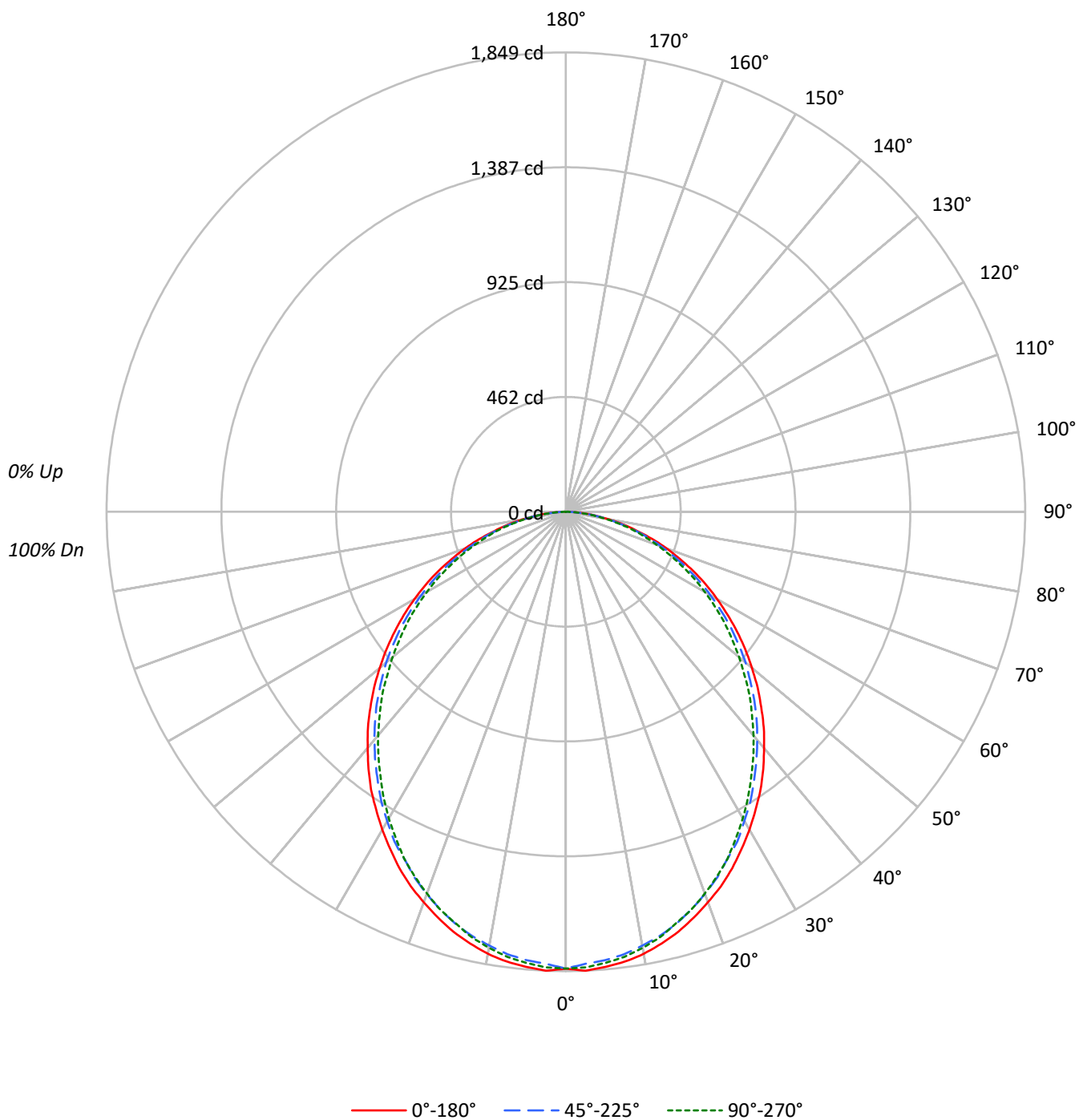
Lumens per Lamp: N/A  
Luminaire Lumens: 4677.7 lumens  
Efficiency: N/A  
Efficacy: 96.4 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
Luminous Opening: Rectangular (W 4.09' x L: 3.54' x H: 0')  
CIE Type: Direct

Input Watts (W): 48.5  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9957  
Total Harmonic Distortion (THDi): 0.049  
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°  | 1367 | 1367 | 1367 |
| 5°  | 1372 | 1352 | 1361 |
| 10° | 1364 | 1339 | 1346 |
| 15° | 1347 | 1321 | 1320 |
| 20° | 1323 | 1295 | 1294 |
| 25° | 1300 | 1263 | 1263 |
| 30° | 1269 | 1234 | 1223 |
| 35° | 1240 | 1199 | 1181 |
| 40° | 1205 | 1163 | 1141 |
| 45° | 1169 | 1128 | 1101 |
| 50° | 1131 | 1092 | 1053 |
| 55° | 1091 | 1050 | 1011 |
| 60° | 1046 | 999  | 962  |
| 65° | 999  | 949  | 905  |
| 70° | 938  | 888  | 846  |
| 75° | 853  | 817  | 798  |
| 80° | 757  | 734  | 696  |
| 85° | 618  | 589  | 528  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 1169 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 173.0  | 3.7       |
| 10°-20°   | 486.9  | 10.4      |
| 20°-30°   | 715.5  | 15.3      |
| 30°-40°   | 831.0  | 17.8      |
| 40°-50°   | 830.0  | 17.7      |
| 50°-60°   | 723.7  | 15.5      |
| 60°-70°   | 535.0  | 11.4      |
| 70°-80°   | 302.7  | 6.5       |
| 80°-90°   | 79.9   | 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°    | 1375.4 | 29.4      |
| 0°-40°    | 2206.5 | 47.2      |
| 0°-60°    | 3760.2 | 80.4      |
| 0°-90°    | 4677.7 | 100.0     |
| 90°-120°  | 0.0    | 0.0       |
| 90°-150°  | 0.0    | 0.0       |
| 90°-180°  | 0.0    | 0.0       |
| 0°-180°   | 4677.7 | 100.0     |

**CANDELA DISTRIBUTION:**

|     | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|-----|------|-------|------|-------|------|------|
| 0°  | 1838 | 1838  | 1838 | 1838  | 1838 |      |
| 5°  | 1838 | 1832  | 1812 | 1826  | 1823 | 175  |
| 15° | 1750 | 1740  | 1717 | 1724  | 1715 | 493  |
| 25° | 1584 | 1570  | 1540 | 1543  | 1540 | 729  |
| 35° | 1367 | 1349  | 1321 | 1310  | 1301 | 853  |
| 45° | 1112 | 1100  | 1073 | 1054  | 1047 | 858  |
| 55° | 842  | 831   | 810  | 788   | 780  | 752  |
| 65° | 568  | 557   | 539  | 523   | 514  | 561  |
| 75° | 297  | 294   | 284  | 274   | 278  | 317  |
| 85° | 72   | 71    | 69   | 64    | 62   | 85   |
| 90° | 0    | 0     | 0    | 0     | 0    |      |

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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|-------|--------|--------|--------|--------|--------|
| 0°    | 1838.5 | 1838.5 | 1838.5 | 1838.5 | 1838.5 |
| 2.5°  | 1849.2 | 1840.4 | 1820.9 | 1838.5 | 1835.2 |
| 5°    | 1838.5 | 1831.6 | 1812.0 | 1826.1 | 1822.8 |
| 7.5°  | 1826.1 | 1815.6 | 1796.2 | 1810.4 | 1806.8 |
| 10°   | 1806.8 | 1794.5 | 1773.3 | 1787.3 | 1782.1 |
| 12.5° | 1780.2 | 1769.7 | 1748.5 | 1757.3 | 1753.7 |
| 15°   | 1750.1 | 1739.7 | 1716.6 | 1723.8 | 1714.9 |
| 17.5° | 1713.0 | 1702.5 | 1679.5 | 1688.2 | 1679.5 |
| 20°   | 1672.4 | 1661.9 | 1637.1 | 1642.3 | 1635.4 |
| 22.5° | 1631.8 | 1615.9 | 1592.8 | 1592.8 | 1589.2 |
| 25°   | 1584.0 | 1569.9 | 1539.9 | 1543.3 | 1539.9 |
| 27.5° | 1530.9 | 1518.5 | 1495.7 | 1490.4 | 1481.6 |
| 30°   | 1478.0 | 1463.8 | 1437.3 | 1432.1 | 1425.0 |
| 32.5° | 1421.4 | 1410.9 | 1382.5 | 1371.9 | 1364.8 |
| 35°   | 1366.6 | 1349.0 | 1320.6 | 1310.0 | 1301.2 |
| 37.5° | 1304.7 | 1288.8 | 1260.4 | 1248.1 | 1239.3 |
| 40°   | 1241.2 | 1226.9 | 1198.5 | 1182.8 | 1175.7 |
| 42.5° | 1179.3 | 1165.0 | 1136.8 | 1119.0 | 1108.5 |
| 45°   | 1112.1 | 1099.7 | 1073.0 | 1053.8 | 1046.6 |
| 47.5° | 1046.6 | 1034.2 | 1006.0 | 986.4  | 975.9  |
| 50°   | 977.6  | 968.8  | 944.1  | 919.3  | 910.4  |
| 52.5° | 910.4  | 898.0  | 875.2  | 855.7  | 843.3  |
| 55°   | 841.6  | 830.9  | 809.7  | 788.5  | 779.7  |
| 57.5° | 772.5  | 763.7  | 740.7  | 719.5  | 712.3  |
| 60°   | 703.6  | 696.7  | 671.9  | 652.3  | 647.1  |
| 62.5° | 636.5  | 624.1  | 606.4  | 588.7  | 581.6  |
| 65°   | 567.6  | 556.9  | 539.2  | 523.3  | 514.5  |
| 67.5° | 496.9  | 487.9  | 472.1  | 459.7  | 452.6  |
| 70°   | 431.4  | 424.3  | 408.3  | 396.0  | 389.1  |
| 72.5° | 364.3  | 357.1  | 348.3  | 335.9  | 330.7  |
| 75°   | 296.9  | 293.5  | 284.5  | 274.0  | 277.6  |
| 77.5° | 236.9  | 229.7  | 226.2  | 220.9  | 215.7  |
| 80°   | 176.9  | 175.0  | 171.4  | 166.2  | 162.6  |
| 82.5° | 120.2  | 120.2  | 118.5  | 111.4  | 111.4  |
| 85°   | 72.4   | 70.7   | 69.0   | 63.6   | 61.9   |
| 87.5° | 31.8   | 28.4   | 24.8   | 19.5   | 17.7   |
| 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 | 12.37            | 13.98 | 12.73 | 14.29 | 14.61 | 11.92          | 13.54 | 12.29 | 13.85 | 14.16 |
|                 | 3H   | 14.12            | 15.57 | 14.50 | 15.90 | 16.26 | 13.63          | 15.08 | 14.00 | 15.41 | 15.77 |
|                 | 4H   | 14.77            | 16.13 | 15.16 | 16.48 | 16.86 | 14.27          | 15.64 | 14.67 | 15.99 | 16.36 |
|                 | 6H   | 15.23            | 16.50 | 15.65 | 16.87 | 17.26 | 14.73          | 16.00 | 15.14 | 16.37 | 16.76 |
|                 | 8H   | 15.38            | 16.59 | 15.80 | 16.98 | 17.38 | 14.87          | 16.09 | 15.30 | 16.47 | 16.87 |
|                 | 12H  | 15.47            | 16.63 | 15.90 | 17.01 | 17.44 | 14.96          | 16.12 | 15.38 | 16.50 | 16.93 |
| 4H              | 2H   | 12.93            | 14.30 | 13.33 | 14.65 | 15.02 | 12.58          | 13.95 | 12.97 | 14.29 | 14.67 |
|                 | 3H   | 14.90            | 16.05 | 15.31 | 16.45 | 16.85 | 14.50          | 15.64 | 14.91 | 16.04 | 16.44 |
|                 | 4H   | 15.68            | 16.72 | 16.11 | 17.13 | 17.57 | 15.26          | 16.29 | 15.69 | 16.71 | 17.14 |
|                 | 6H   | 16.28            | 17.18 | 16.73 | 17.62 | 18.08 | 15.84          | 16.75 | 16.30 | 17.19 | 17.65 |
|                 | 8H   | 16.47            | 17.31 | 16.93 | 17.76 | 18.22 | 16.03          | 16.88 | 16.49 | 17.32 | 17.78 |
|                 | 12H  | 16.60            | 17.36 | 17.08 | 17.83 | 18.30 | 16.15          | 16.91 | 16.63 | 17.38 | 17.85 |
| 8H              | 4H   | 15.95            | 16.80 | 16.41 | 17.24 | 17.71 | 15.58          | 16.43 | 16.04 | 16.87 | 17.33 |
|                 | 6H   | 16.67            | 17.37 | 17.16 | 17.86 | 18.34 | 16.29          | 16.99 | 16.78 | 17.48 | 17.95 |
|                 | 8H   | 16.93            | 17.56 | 17.44 | 18.06 | 18.55 | 16.54          | 17.17 | 17.05 | 17.67 | 18.16 |
|                 | 12H  | 17.13            | 17.68 | 17.63 | 18.18 | 18.74 | 16.71          | 17.27 | 17.22 | 17.76 | 18.32 |
| 12H             | 4H   | 15.98            | 16.74 | 16.46 | 17.22 | 17.69 | 15.62          | 16.38 | 16.10 | 16.85 | 17.32 |
|                 | 6H   | 16.71            | 17.35 | 17.22 | 17.85 | 18.34 | 16.34          | 16.98 | 16.85 | 17.48 | 17.97 |
|                 | 8H   | 17.03            | 17.59 | 17.53 | 18.08 | 18.64 | 16.65          | 17.21 | 17.16 | 17.70 | 18.26 |