

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: P930287

Luminaire Tested: DFN2DS-HX4F0-050DS940-FLL

Issue Date: 11/20/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P930287  
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-HX4F0-050DS940-FLL  
Description: 4 foot, Hexagon Define Geo, with Direct Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

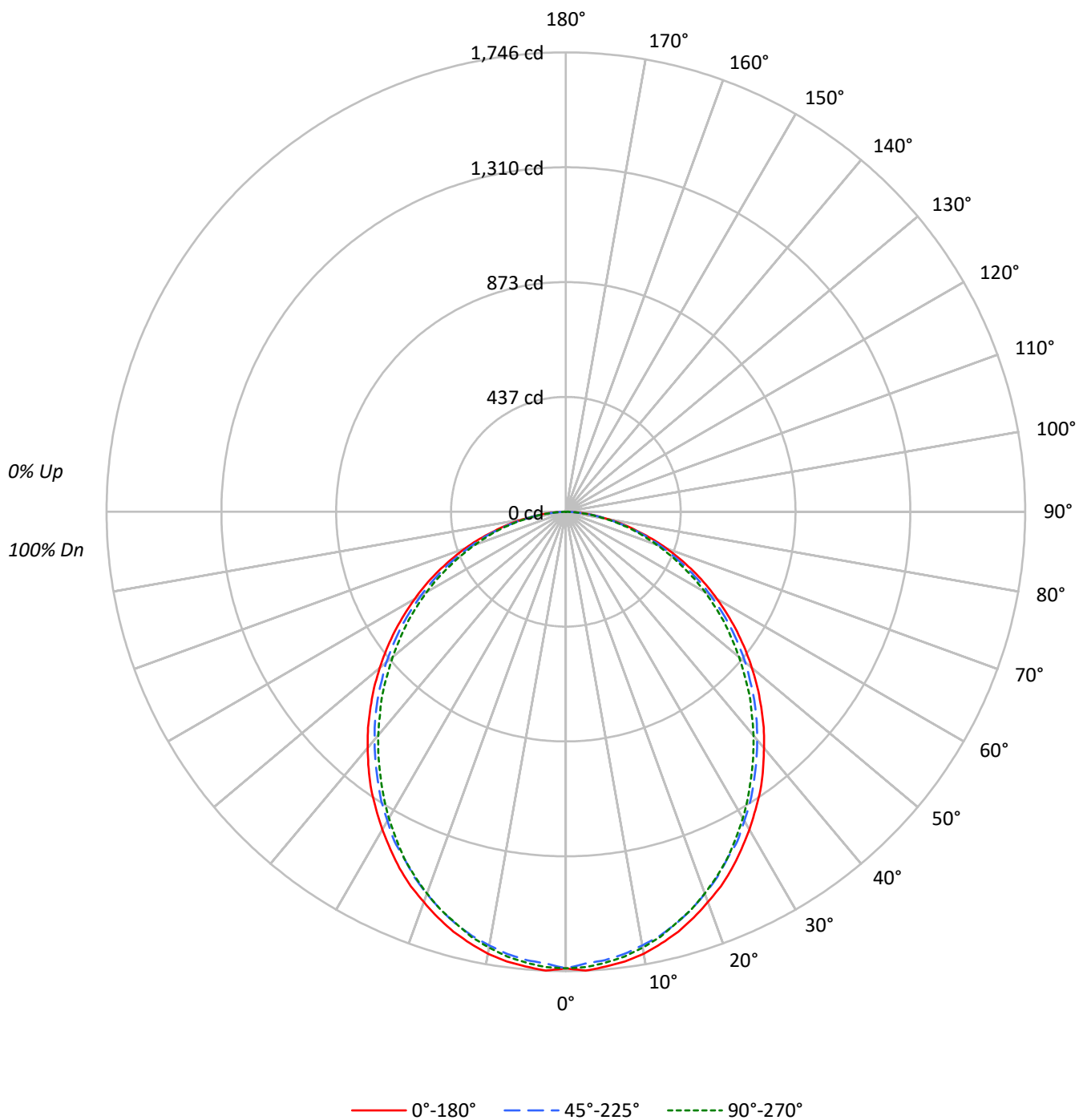
Lumens per Lamp: N/A  
Luminaire Lumens: 4415.4 lumens  
Efficiency: N/A  
Efficacy: 91.0 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
Luminous Opening: Rectangular (W 4.09' x L: 3.54' x H: 0')  
CIE Type: Direct

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°  | 1290 | 1290 | 1290 |
| 5°  | 1295 | 1277 | 1284 |
| 10° | 1288 | 1264 | 1270 |
| 15° | 1272 | 1247 | 1246 |
| 20° | 1249 | 1223 | 1222 |
| 25° | 1227 | 1192 | 1192 |
| 30° | 1198 | 1165 | 1155 |
| 35° | 1171 | 1132 | 1115 |
| 40° | 1137 | 1098 | 1077 |
| 45° | 1104 | 1065 | 1039 |
| 50° | 1067 | 1031 | 994  |
| 55° | 1030 | 991  | 954  |
| 60° | 988  | 943  | 908  |
| 65° | 943  | 896  | 854  |
| 70° | 885  | 838  | 798  |
| 75° | 805  | 772  | 753  |
| 80° | 715  | 693  | 657  |
| 85° | 583  | 555  | 498  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 1104 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 163.3  | 3.7       |
| 10°-20°   | 459.6  | 10.4      |
| 20°-30°   | 675.4  | 15.3      |
| 30°-40°   | 784.4  | 17.8      |
| 40°-50°   | 783.4  | 17.7      |
| 50°-60°   | 683.1  | 15.5      |
| 60°-70°   | 505.0  | 11.4      |
| 70°-80°   | 285.7  | 6.5       |
| 80°-90°   | 75.4   | 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°    | 1298.3 | 29.4      |
| 0°-40°    | 2082.7 | 47.2      |
| 0°-60°    | 3549.3 | 80.4      |
| 0°-90°    | 4415.4 | 100.0     |
| 90°-120°  | 0.0    | 0.0       |
| 90°-150°  | 0.0    | 0.0       |
| 90°-180°  | 0.0    | 0.0       |
| 0°-180°   | 4415.4 | 100.0     |

**CANDELA DISTRIBUTION:**

|     | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|-----|------|-------|------|-------|------|------|
| 0°  | 1735 | 1735  | 1735 | 1735  | 1735 |      |
| 5°  | 1735 | 1729  | 1710 | 1724  | 1721 | 165  |
| 15° | 1652 | 1642  | 1620 | 1627  | 1619 | 465  |
| 25° | 1495 | 1482  | 1454 | 1457  | 1454 | 688  |
| 35° | 1290 | 1273  | 1247 | 1236  | 1228 | 806  |
| 45° | 1050 | 1038  | 1013 | 995   | 988  | 810  |
| 55° | 794  | 784   | 764  | 744   | 736  | 710  |
| 65° | 536  | 526   | 509  | 494   | 486  | 530  |
| 75° | 280  | 277   | 269  | 259   | 262  | 299  |
| 85° | 68   | 67    | 65   | 60    | 58   | 80   |
| 90° | 0    | 0     | 0    | 0     | 0    |      |

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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|-------|--------|--------|--------|--------|--------|
| 0°    | 1735.4 | 1735.4 | 1735.4 | 1735.4 | 1735.4 |
| 2.5°  | 1745.5 | 1737.2 | 1718.8 | 1735.4 | 1732.3 |
| 5°    | 1735.4 | 1728.9 | 1710.4 | 1723.7 | 1720.6 |
| 7.5°  | 1723.7 | 1713.8 | 1695.4 | 1708.9 | 1705.5 |
| 10°   | 1705.5 | 1693.8 | 1673.8 | 1687.0 | 1682.1 |
| 12.5° | 1680.3 | 1670.4 | 1650.5 | 1658.8 | 1655.4 |
| 15°   | 1652.0 | 1642.1 | 1620.3 | 1627.1 | 1618.7 |
| 17.5° | 1616.9 | 1607.0 | 1585.3 | 1593.6 | 1585.3 |
| 20°   | 1578.6 | 1568.7 | 1545.3 | 1550.2 | 1543.7 |
| 22.5° | 1540.3 | 1525.2 | 1503.5 | 1503.5 | 1500.1 |
| 25°   | 1495.2 | 1481.9 | 1453.5 | 1456.7 | 1453.5 |
| 27.5° | 1445.0 | 1433.4 | 1411.8 | 1406.8 | 1398.5 |
| 30°   | 1395.1 | 1381.7 | 1356.7 | 1351.7 | 1345.0 |
| 32.5° | 1341.7 | 1331.8 | 1305.0 | 1294.9 | 1288.2 |
| 35°   | 1289.9 | 1273.3 | 1246.6 | 1236.5 | 1228.2 |
| 37.5° | 1231.5 | 1216.5 | 1189.7 | 1178.1 | 1169.8 |
| 40°   | 1171.6 | 1158.1 | 1131.3 | 1116.4 | 1109.7 |
| 42.5° | 1113.1 | 1099.7 | 1073.1 | 1056.2 | 1046.3 |
| 45°   | 1049.7 | 1038.0 | 1012.9 | 994.7  | 987.9  |
| 47.5° | 987.9  | 976.2  | 949.5  | 931.1  | 921.2  |
| 50°   | 922.8  | 914.5  | 891.1  | 867.7  | 859.4  |
| 52.5° | 859.4  | 847.7  | 826.1  | 807.7  | 796.0  |
| 55°   | 794.4  | 784.3  | 764.3  | 744.3  | 736.0  |
| 57.5° | 729.2  | 720.9  | 699.1  | 679.2  | 672.4  |
| 60°   | 664.1  | 657.6  | 634.2  | 615.7  | 610.8  |
| 62.5° | 600.8  | 589.1  | 572.4  | 555.7  | 549.0  |
| 65°   | 535.7  | 525.7  | 509.0  | 494.0  | 485.6  |
| 67.5° | 469.0  | 460.5  | 445.6  | 434.0  | 427.2  |
| 70°   | 407.2  | 400.5  | 385.4  | 373.7  | 367.2  |
| 72.5° | 343.9  | 337.1  | 328.8  | 317.1  | 312.1  |
| 75°   | 280.3  | 277.1  | 268.6  | 258.7  | 262.1  |
| 77.5° | 223.6  | 216.8  | 213.5  | 208.5  | 203.6  |
| 80°   | 167.0  | 165.2  | 161.8  | 156.9  | 153.5  |
| 82.5° | 113.5  | 113.5  | 111.9  | 105.2  | 105.2  |
| 85°   | 68.3   | 66.7   | 65.1   | 60.0   | 58.4   |
| 87.5° | 30.1   | 26.8   | 23.4   | 18.4   | 16.7   |
| 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 | 12.17            | 13.78 | 12.53 | 14.09 | 14.41 | 11.72          | 13.33 | 12.09 | 13.65 | 13.96 |
|                 | 3H   | 13.92            | 15.37 | 14.30 | 15.70 | 16.06 | 13.43          | 14.88 | 13.80 | 15.21 | 15.57 |
|                 | 4H   | 14.56            | 15.93 | 14.96 | 16.28 | 16.66 | 14.07          | 15.44 | 14.47 | 15.79 | 16.16 |
|                 | 6H   | 15.03            | 16.30 | 15.44 | 16.67 | 17.06 | 14.53          | 15.80 | 14.94 | 16.17 | 16.56 |
|                 | 8H   | 15.18            | 16.39 | 15.60 | 16.78 | 17.18 | 14.67          | 15.89 | 15.10 | 16.27 | 16.67 |
|                 | 12H  | 15.27            | 16.43 | 15.70 | 16.81 | 17.24 | 14.76          | 15.92 | 15.18 | 16.30 | 16.73 |
| 4H              | 2H   | 12.73            | 14.10 | 13.13 | 14.45 | 14.82 | 12.38          | 13.75 | 12.77 | 14.09 | 14.47 |
|                 | 3H   | 14.70            | 15.85 | 15.11 | 16.25 | 16.65 | 14.30          | 15.44 | 14.71 | 15.84 | 16.24 |
|                 | 4H   | 15.48            | 16.52 | 15.91 | 16.93 | 17.37 | 15.06          | 16.09 | 15.49 | 16.51 | 16.94 |
|                 | 6H   | 16.08            | 16.98 | 16.53 | 17.42 | 17.88 | 15.64          | 16.55 | 16.10 | 16.99 | 17.45 |
|                 | 8H   | 16.27            | 17.11 | 16.73 | 17.56 | 18.02 | 15.83          | 16.68 | 16.29 | 17.12 | 17.58 |
|                 | 12H  | 16.40            | 17.16 | 16.88 | 17.63 | 18.10 | 15.95          | 16.71 | 16.43 | 17.18 | 17.65 |
| 8H              | 4H   | 15.75            | 16.60 | 16.21 | 17.04 | 17.51 | 15.38          | 16.23 | 15.84 | 16.67 | 17.13 |
|                 | 6H   | 16.47            | 17.17 | 16.96 | 17.66 | 18.13 | 16.09          | 16.79 | 16.58 | 17.28 | 17.75 |
|                 | 8H   | 16.73            | 17.36 | 17.24 | 17.86 | 18.35 | 16.34          | 16.97 | 16.85 | 17.47 | 17.96 |
|                 | 12H  | 16.93            | 17.48 | 17.43 | 17.98 | 18.54 | 16.51          | 17.07 | 17.02 | 17.56 | 18.12 |
| 12H             | 4H   | 15.78            | 16.54 | 16.26 | 17.02 | 17.48 | 15.42          | 16.18 | 15.90 | 16.65 | 17.12 |
|                 | 6H   | 16.51            | 17.15 | 17.02 | 17.65 | 18.14 | 16.14          | 16.78 | 16.65 | 17.28 | 17.77 |
|                 | 8H   | 16.83            | 17.39 | 17.33 | 17.88 | 18.44 | 16.45          | 17.01 | 16.96 | 17.50 | 18.06 |