

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: P931487

Luminaire Tested: DFN2DS-TR4F0-060DS927-FLL

Issue Date: 11/20/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P931487  
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-TR4F0-060DS927-FLL  
Description: 4 foot, Triangle Define Geo, with Direct Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

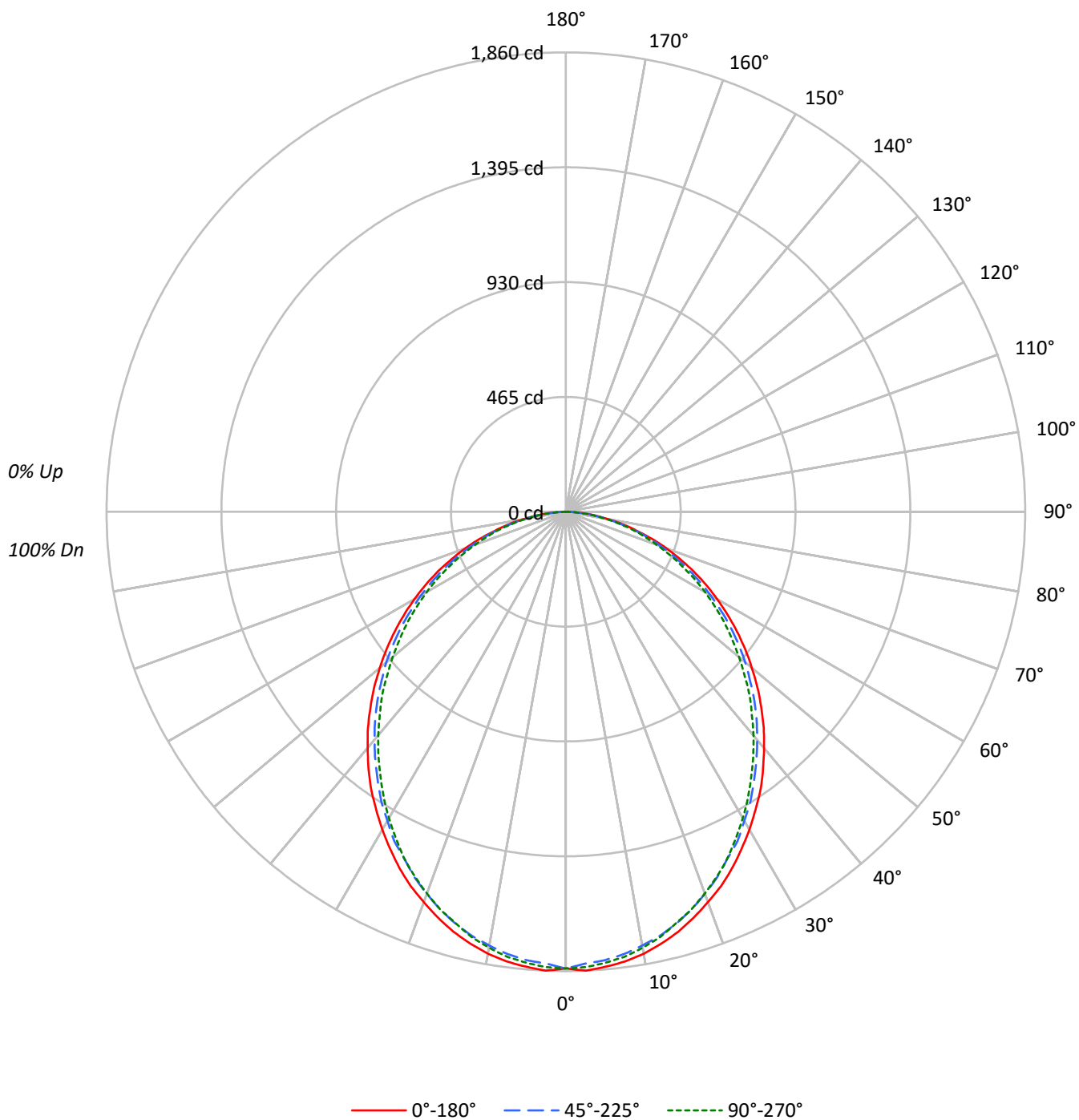
Lumens per Lamp: N/A  
Luminaire Lumens: 4704.5 lumens  
Efficiency: N/A  
Efficacy: 78.9 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
Luminous Opening: Rectangular (W 3.96' x L: 3.43' x H: 0')  
CIE Type: Direct

Input Watts (W): 59.6  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9781  
Total Harmonic Distortion (THDi): 0.075  
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°  | 1469 | 1469 | 1469 |
| 5°  | 1475 | 1453 | 1462 |
| 10° | 1466 | 1439 | 1446 |
| 15° | 1448 | 1420 | 1418 |
| 20° | 1422 | 1392 | 1390 |
| 25° | 1396 | 1358 | 1358 |
| 30° | 1364 | 1326 | 1315 |
| 35° | 1333 | 1288 | 1269 |
| 40° | 1294 | 1250 | 1226 |
| 45° | 1257 | 1212 | 1183 |
| 50° | 1215 | 1173 | 1132 |
| 55° | 1172 | 1128 | 1086 |
| 60° | 1124 | 1074 | 1034 |
| 65° | 1073 | 1020 | 973  |
| 70° | 1008 | 954  | 909  |
| 75° | 917  | 878  | 857  |
| 80° | 814  | 789  | 748  |
| 85° | 664  | 633  | 568  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
Vertical Angle: 45°  
Luminance: 1257 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 174.0  | 3.7       |
| 10°-20°   | 489.7  | 10.4      |
| 20°-30°   | 719.6  | 15.3      |
| 30°-40°   | 835.8  | 17.8      |
| 40°-50°   | 834.7  | 17.7      |
| 50°-60°   | 727.9  | 15.5      |
| 60°-70°   | 538.1  | 11.4      |
| 70°-80°   | 304.4  | 6.5       |
| 80°-90°   | 80.3   | 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°    | 1383.3 | 29.4      |
| 0°-40°    | 2219.1 | 47.2      |
| 0°-60°    | 3781.7 | 80.4      |
| 0°-90°    | 4704.5 | 100.0     |
| 90°-120°  | 0.0    | 0.0       |
| 90°-150°  | 0.0    | 0.0       |
| 90°-180°  | 0.0    | 0.0       |
| 0°-180°   | 4704.5 | 100.0     |

**CANDELA DISTRIBUTION:**

|     | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|-----|------|-------|------|-------|------|------|
| 0°  | 1849 | 1849  | 1849 | 1849  | 1849 |      |
| 5°  | 1849 | 1842  | 1822 | 1837  | 1833 | 176  |
| 15° | 1760 | 1750  | 1726 | 1734  | 1725 | 496  |
| 25° | 1593 | 1579  | 1549 | 1552  | 1549 | 733  |
| 35° | 1374 | 1357  | 1328 | 1317  | 1308 | 858  |
| 45° | 1118 | 1106  | 1079 | 1060  | 1053 | 863  |
| 55° | 846  | 836   | 814  | 793   | 784  | 757  |
| 65° | 571  | 560   | 542  | 526   | 517  | 564  |
| 75° | 299  | 295   | 286  | 276   | 279  | 319  |
| 85° | 73   | 71    | 69   | 64    | 62   | 86   |
| 90° | 0    | 0     | 0    | 0     | 0    |      |

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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|-------|--------|--------|--------|--------|--------|
| 0°    | 1849.0 | 1849.0 | 1849.0 | 1849.0 | 1849.0 |
| 2.5°  | 1859.8 | 1850.9 | 1831.3 | 1849.0 | 1845.6 |
| 5°    | 1849.0 | 1842.0 | 1822.4 | 1836.6 | 1833.2 |
| 7.5°  | 1836.6 | 1826.0 | 1806.4 | 1820.7 | 1817.2 |
| 10°   | 1817.2 | 1804.7 | 1783.3 | 1797.5 | 1792.2 |
| 12.5° | 1790.4 | 1779.8 | 1758.5 | 1767.3 | 1763.8 |
| 15°   | 1760.1 | 1749.6 | 1726.4 | 1733.6 | 1724.7 |
| 17.5° | 1722.8 | 1712.3 | 1689.1 | 1697.9 | 1689.1 |
| 20°   | 1681.9 | 1671.4 | 1646.4 | 1651.7 | 1644.7 |
| 22.5° | 1641.2 | 1625.1 | 1601.9 | 1601.9 | 1598.3 |
| 25°   | 1593.0 | 1578.9 | 1548.7 | 1552.1 | 1548.7 |
| 27.5° | 1539.6 | 1527.2 | 1504.2 | 1498.9 | 1490.1 |
| 30°   | 1486.5 | 1472.1 | 1445.6 | 1440.3 | 1433.0 |
| 32.5° | 1429.5 | 1418.9 | 1390.4 | 1379.7 | 1372.5 |
| 35°   | 1374.4 | 1356.7 | 1328.2 | 1317.4 | 1308.5 |
| 37.5° | 1312.2 | 1296.1 | 1267.7 | 1255.2 | 1246.3 |
| 40°   | 1248.2 | 1233.9 | 1205.4 | 1189.6 | 1182.4 |
| 42.5° | 1185.9 | 1171.6 | 1143.3 | 1125.4 | 1114.8 |
| 45°   | 1118.5 | 1105.9 | 1079.2 | 1059.8 | 1052.6 |
| 47.5° | 1052.6 | 1040.1 | 1011.7 | 992.1  | 981.4  |
| 50°   | 983.2  | 974.3  | 949.4  | 924.5  | 915.6  |
| 52.5° | 915.6  | 903.2  | 880.1  | 860.6  | 848.2  |
| 55°   | 846.4  | 835.6  | 814.3  | 793.0  | 784.2  |
| 57.5° | 777.0  | 768.2  | 745.0  | 723.7  | 716.4  |
| 60°   | 707.6  | 700.6  | 675.7  | 656.1  | 650.8  |
| 62.5° | 640.0  | 627.6  | 609.8  | 592.1  | 585.0  |
| 65°   | 570.8  | 560.1  | 542.4  | 526.3  | 517.4  |
| 67.5° | 499.7  | 490.6  | 474.8  | 462.4  | 455.2  |
| 70°   | 433.9  | 426.7  | 410.7  | 398.2  | 391.2  |
| 72.5° | 366.3  | 359.2  | 350.3  | 337.9  | 332.6  |
| 75°   | 298.6  | 295.3  | 286.1  | 275.6  | 279.2  |
| 77.5° | 238.2  | 231.1  | 227.5  | 222.2  | 216.9  |
| 80°   | 177.9  | 176.0  | 172.4  | 167.1  | 163.5  |
| 82.5° | 120.9  | 120.9  | 119.2  | 112.1  | 112.1  |
| 85°   | 72.8   | 71.1   | 69.4   | 63.9   | 62.3   |
| 87.5° | 32.1   | 28.5   | 24.9   | 19.6   | 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 | 12.62            | 14.23 | 12.98 | 14.54 | 14.86 | 12.17          | 13.79 | 12.54 | 14.10 | 14.41 |
|                 | 3H   | 14.37            | 15.82 | 14.75 | 16.15 | 16.51 | 13.88          | 15.33 | 14.25 | 15.66 | 16.02 |
|                 | 4H   | 15.02            | 16.38 | 15.41 | 16.73 | 17.11 | 14.52          | 15.89 | 14.92 | 16.24 | 16.61 |
|                 | 6H   | 15.48            | 16.75 | 15.90 | 17.12 | 17.51 | 14.98          | 16.25 | 15.39 | 16.62 | 17.01 |
|                 | 8H   | 15.63            | 16.84 | 16.05 | 17.23 | 17.63 | 15.12          | 16.34 | 15.55 | 16.72 | 17.12 |
|                 | 12H  | 15.72            | 16.88 | 16.15 | 17.26 | 17.69 | 15.21          | 16.37 | 15.64 | 16.75 | 17.18 |
| 4H              | 2H   | 13.18            | 14.55 | 13.58 | 14.90 | 15.27 | 12.83          | 14.20 | 13.23 | 14.54 | 14.92 |
|                 | 3H   | 15.15            | 16.30 | 15.56 | 16.70 | 17.10 | 14.75          | 15.89 | 15.16 | 16.29 | 16.69 |
|                 | 4H   | 15.93            | 16.97 | 16.36 | 17.38 | 17.82 | 15.51          | 16.54 | 15.94 | 16.96 | 17.39 |
|                 | 6H   | 16.53            | 17.43 | 16.98 | 17.87 | 18.33 | 16.09          | 17.00 | 16.55 | 17.44 | 17.90 |
|                 | 8H   | 16.72            | 17.56 | 17.18 | 18.01 | 18.47 | 16.28          | 17.13 | 16.74 | 17.57 | 18.03 |
|                 | 12H  | 16.85            | 17.61 | 17.33 | 18.08 | 18.55 | 16.40          | 17.16 | 16.88 | 17.63 | 18.10 |
| 8H              | 4H   | 16.20            | 17.05 | 16.66 | 17.49 | 17.96 | 15.83          | 16.68 | 16.29 | 17.12 | 17.58 |
|                 | 6H   | 16.92            | 17.62 | 17.41 | 18.11 | 18.59 | 16.54          | 17.24 | 17.03 | 17.73 | 18.20 |
|                 | 8H   | 17.18            | 17.81 | 17.69 | 18.32 | 18.80 | 16.79          | 17.42 | 17.30 | 17.92 | 18.41 |
|                 | 12H  | 17.38            | 17.94 | 17.88 | 18.43 | 18.99 | 16.96          | 17.52 | 17.47 | 18.01 | 18.57 |
| 12H             | 4H   | 16.23            | 16.99 | 16.71 | 17.47 | 17.94 | 15.87          | 16.63 | 16.35 | 17.10 | 17.57 |
|                 | 6H   | 16.96            | 17.60 | 17.47 | 18.10 | 18.59 | 16.59          | 17.23 | 17.10 | 17.73 | 18.22 |
|                 | 8H   | 17.28            | 17.84 | 17.78 | 18.33 | 18.89 | 16.90          | 17.46 | 17.41 | 17.95 | 18.51 |

END OF REPORT