

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: P931494

Luminaire Tested: DFN2DS-TR4F0-060DS940-RLL

Issue Date: 11/20/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P931494  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (P333882)  
Test Lab: INNOVATION CENTER  
Issue Date: 11/20/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DS-TR4F0-060DS940-RLL  
Description: 4 foot, Triangle Define Geo, with Direct 1in Regressed Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

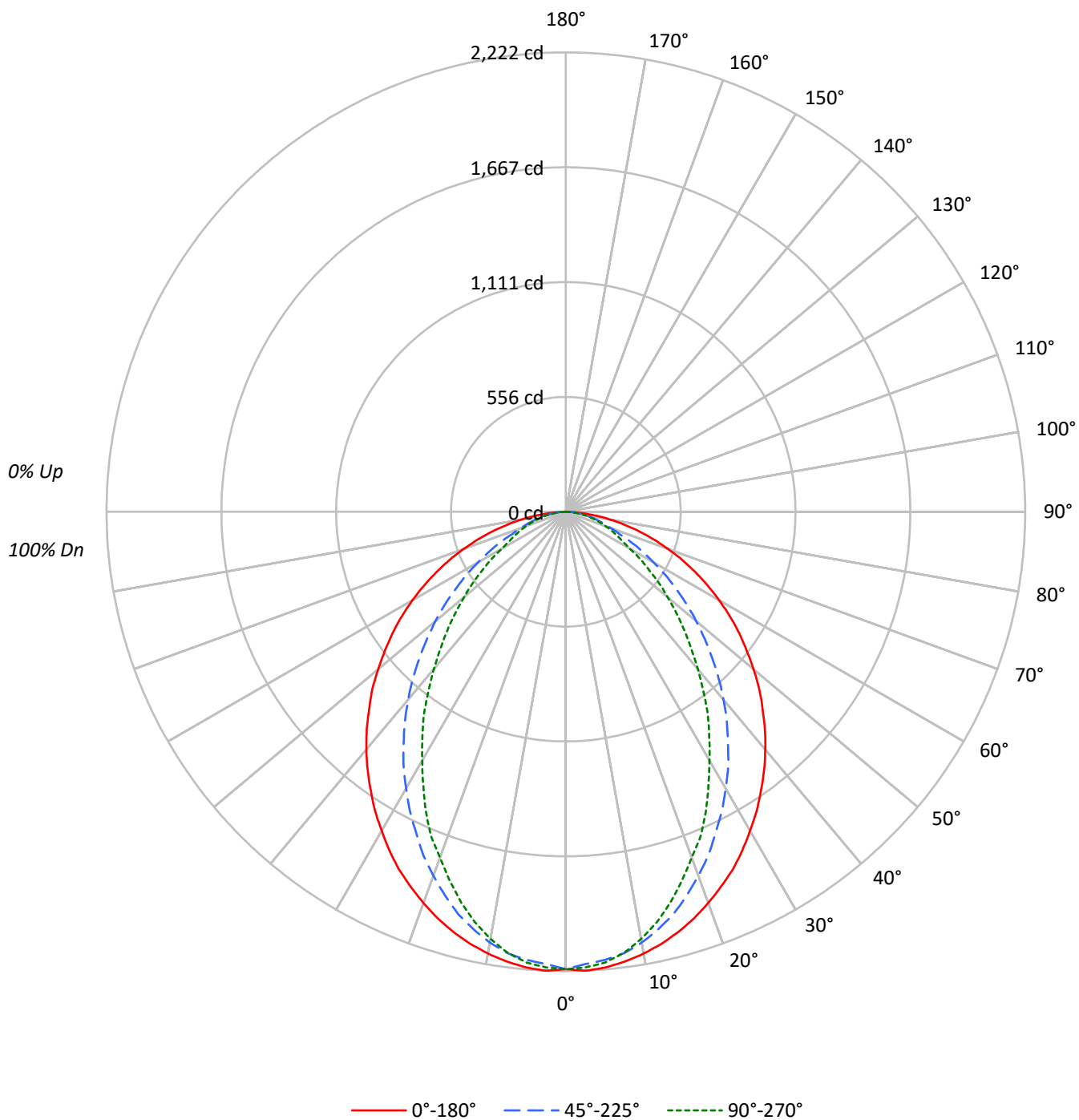
Lumens per Lamp: N/A  
Luminaire Lumens: 4549.2 lumens  
Efficiency: N/A  
Efficacy: 76.3 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular (W 3.96' x L: 3.43' x H: 0')  
CIE Type: Direct

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   | 110 | 106 | 102 | 98  | 107 | 103 | 100 | 97  | 99  | 96  | 94  |  | 95  | 93  | 91  |  | 92  |
| 2   | 101 | 94  | 87  | 82  | 98  | 92  | 86  | 81  | 88  | 83  | 79  |  | 85  | 81  | 78  |  | 82  |
| 3   | 93  | 83  | 76  | 70  | 90  | 82  | 75  | 69  | 79  | 73  | 68  |  | 76  | 71  | 67  |  | 74  |
| 4   | 86  | 75  | 66  | 60  | 83  | 73  | 66  | 60  | 71  | 64  | 59  |  | 69  | 63  | 58  |  | 66  |
| 5   | 79  | 67  | 59  | 53  | 77  | 66  | 58  | 52  | 64  | 57  | 52  |  | 62  | 56  | 51  |  | 60  |
| 6   | 74  | 61  | 53  | 47  | 72  | 60  | 52  | 46  | 58  | 51  | 46  |  | 57  | 50  | 46  |  | 55  |
| 7   | 68  | 56  | 47  | 42  | 67  | 55  | 47  | 42  | 53  | 46  | 41  |  | 52  | 46  | 41  |  | 51  |
| 8   | 64  | 51  | 43  | 38  | 62  | 51  | 43  | 37  | 49  | 42  | 37  |  | 48  | 42  | 37  |  | 47  |
| 9   | 60  | 47  | 39  | 34  | 59  | 47  | 39  | 34  | 46  | 39  | 34  |  | 44  | 38  | 34  |  | 44  |
| 10  | 56  | 44  | 36  | 31  | 55  | 43  | 36  | 31  | 42  | 36  | 31  |  | 41  | 35  | 31  |  | 41  |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 1757 | 1757 | 1757 |
| 5°  | 1764 | 1735 | 1745 |
| 10° | 1750 | 1707 | 1692 |
| 15° | 1730 | 1656 | 1609 |
| 20° | 1703 | 1584 | 1504 |
| 25° | 1674 | 1502 | 1404 |
| 30° | 1634 | 1418 | 1274 |
| 35° | 1596 | 1326 | 1161 |
| 40° | 1557 | 1231 | 1030 |
| 45° | 1511 | 1125 | 911  |
| 50° | 1465 | 1017 | 794  |
| 55° | 1417 | 901  | 682  |
| 60° | 1361 | 779  | 566  |
| 65° | 1298 | 655  | 515  |
| 70° | 1223 | 539  | 474  |
| 75° | 1130 | 491  | 443  |
| 80° | 998  | 439  | 403  |
| 85° | 784  | 346  | 346  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 1511 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 207.3  | 4.6       |
| 10°-20°   | 569.1  | 12.5      |
| 20°-30°   | 799.0  | 17.6      |
| 30°-40°   | 871.0  | 19.1      |
| 40°-50°   | 800.5  | 17.6      |
| 50°-60°   | 628.7  | 13.8      |
| 60°-70°   | 409.2  | 9.0       |
| 70°-80°   | 210.6  | 4.6       |
| 80°-90°   | 53.8   | 1.2       |
| 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°    | 1575.4 | 34.6      |
| 0°-40°    | 2446.4 | 53.8      |
| 0°-60°    | 3875.6 | 85.2      |
| 0°-90°    | 4549.2 | 100.0     |
| 90°-120°  | 0.0    | 0.0       |
| 90°-150°  | 0.0    | 0.0       |
| 90°-180°  | 0.0    | 0.0       |
| 0°-180°   | 4549.2 | 100.0     |

**CANDELA DISTRIBUTION:**

|     | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|-----|------|-------|------|-------|------|------|
| 0°  | 2212 | 2212  | 2212 | 2212  | 2212 |      |
| 5°  | 2212 | 2202  | 2176 | 2194  | 2188 | 210  |
| 15° | 2104 | 2082  | 2014 | 1976  | 1956 | 593  |
| 25° | 1910 | 1846  | 1714 | 1632  | 1601 | 878  |
| 35° | 1646 | 1543  | 1367 | 1241  | 1197 | 1030 |
| 45° | 1345 | 1211  | 1001 | 859   | 811  | 1039 |
| 55° | 1023 | 867   | 650  | 531   | 492  | 914  |
| 65° | 691  | 528   | 348  | 280   | 274  | 685  |
| 75° | 368  | 228   | 160  | 146   | 144  | 390  |
| 85° | 86   | 44    | 38   | 38    | 38   | 103  |
| 90° | 0    | 0     | 0    | 0     | 0    |      |

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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|-------|--------|--------|--------|--------|--------|
| 0°    | 2212.0 | 2212.0 | 2212.0 | 2212.0 | 2212.0 |
| 2.5°  | 2222.0 | 2212.0 | 2189.9 | 2210.0 | 2206.0 |
| 5°    | 2212.0 | 2202.0 | 2175.9 | 2194.0 | 2188.0 |
| 7.5°  | 2194.0 | 2182.0 | 2154.0 | 2161.9 | 2151.9 |
| 10°   | 2169.9 | 2155.9 | 2116.0 | 2109.8 | 2097.9 |
| 12.5° | 2140.0 | 2121.9 | 2067.7 | 2055.9 | 2033.8 |
| 15°   | 2103.9 | 2081.7 | 2013.8 | 1975.8 | 1955.8 |
| 17.5° | 2061.9 | 2029.7 | 1945.6 | 1901.7 | 1869.6 |
| 20°   | 2013.8 | 1973.6 | 1873.6 | 1823.7 | 1779.5 |
| 22.5° | 1961.8 | 1915.7 | 1799.5 | 1731.6 | 1701.6 |
| 25°   | 1909.8 | 1845.6 | 1713.5 | 1631.6 | 1601.4 |
| 27.5° | 1847.8 | 1779.5 | 1633.4 | 1539.3 | 1493.3 |
| 30°   | 1781.7 | 1705.4 | 1545.3 | 1443.3 | 1389.2 |
| 32.5° | 1717.5 | 1625.4 | 1461.5 | 1341.2 | 1291.1 |
| 35°   | 1645.6 | 1543.4 | 1367.3 | 1241.1 | 1197.0 |
| 37.5° | 1575.5 | 1465.2 | 1279.2 | 1141.0 | 1091.0 |
| 40°   | 1501.3 | 1381.4 | 1187.0 | 1044.9 | 992.9  |
| 42.5° | 1425.3 | 1297.2 | 1095.0 | 946.8  | 896.9  |
| 45°   | 1345.2 | 1211.0 | 1001.0 | 858.6  | 810.6  |
| 47.5° | 1269.2 | 1127.1 | 910.9  | 768.6  | 724.7  |
| 50°   | 1185.1 | 1043.0 | 822.8  | 684.5  | 642.7  |
| 52.5° | 1102.9 | 952.7  | 738.7  | 606.6  | 568.6  |
| 55°   | 1022.9 | 866.8  | 650.5  | 530.6  | 492.5  |
| 57.5° | 940.9  | 780.7  | 572.6  | 460.5  | 428.3  |
| 60°   | 856.8  | 696.7  | 490.4  | 388.5  | 356.4  |
| 62.5° | 774.8  | 614.7  | 420.3  | 324.3  | 308.4  |
| 65°   | 690.7  | 528.4  | 348.3  | 280.4  | 274.2  |
| 67.5° | 610.6  | 448.3  | 280.4  | 246.2  | 240.2  |
| 70°   | 526.5  | 370.4  | 232.1  | 212.2  | 204.1  |
| 72.5° | 446.4  | 298.2  | 194.1  | 178.2  | 174.1  |
| 75°   | 368.3  | 228.1  | 160.1  | 146.1  | 144.2  |
| 77.5° | 290.3  | 162.1  | 126.1  | 118.1  | 114.1  |
| 80°   | 218.1  | 116.1  | 96.0   | 88.1   | 88.1   |
| 82.5° | 152.1  | 78.1   | 66.0   | 62.0   | 62.0   |
| 85°   | 86.0   | 44.0   | 38.0   | 38.0   | 38.0   |
| 87.5° | 32.1   | 16.0   | 16.0   | 14.0   | 14.0   |
| 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 | 13.19            | 14.72 | 13.56 | 15.03 | 15.34 | 9.15           | 10.68 | 9.52  | 10.99 | 11.30 |
|                 | 3H   | 14.96            | 16.32 | 15.34 | 16.65 | 17.01 | 10.42          | 11.78 | 10.80 | 12.11 | 12.47 |
|                 | 4H   | 15.62            | 16.91 | 16.02 | 17.25 | 17.63 | 10.92          | 12.20 | 11.32 | 12.55 | 12.93 |
|                 | 6H   | 16.11            | 17.30 | 16.53 | 17.66 | 18.06 | 11.30          | 12.49 | 11.71 | 12.85 | 13.24 |
|                 | 8H   | 16.28            | 17.41 | 16.71 | 17.80 | 18.20 | 11.43          | 12.55 | 11.85 | 12.94 | 13.34 |
|                 | 12H  | 16.38            | 17.46 | 16.81 | 17.84 | 18.27 | 11.51          | 12.59 | 11.94 | 12.97 | 13.40 |
| 4H              | 2H   | 13.30            | 14.58 | 13.70 | 14.93 | 15.31 | 9.85           | 11.13 | 10.25 | 11.48 | 11.86 |
|                 | 3H   | 15.23            | 16.29 | 15.64 | 16.69 | 17.09 | 11.29          | 12.36 | 11.70 | 12.76 | 13.16 |
|                 | 4H   | 15.98            | 16.94 | 16.41 | 17.35 | 17.79 | 11.89          | 12.85 | 12.32 | 13.26 | 13.70 |
|                 | 6H   | 16.57            | 17.40 | 17.03 | 17.85 | 18.31 | 12.38          | 13.21 | 12.84 | 13.65 | 14.11 |
|                 | 8H   | 16.79            | 17.56 | 17.25 | 18.01 | 18.47 | 12.54          | 13.32 | 13.01 | 13.76 | 14.23 |
|                 | 12H  | 16.94            | 17.63 | 17.42 | 18.11 | 18.58 | 12.66          | 13.35 | 13.14 | 13.83 | 14.30 |
| 8H              | 4H   | 16.00            | 16.78 | 16.47 | 17.23 | 17.69 | 12.25          | 13.02 | 12.71 | 13.47 | 13.93 |
|                 | 6H   | 16.64            | 17.28 | 17.14 | 17.78 | 18.25 | 12.83          | 13.47 | 13.33 | 13.97 | 14.44 |
|                 | 8H   | 16.89            | 17.47 | 17.41 | 17.98 | 18.47 | 13.05          | 13.63 | 13.57 | 14.14 | 14.63 |
|                 | 12H  | 17.10            | 17.61 | 17.61 | 18.10 | 18.66 | 13.23          | 13.74 | 13.74 | 14.23 | 14.80 |
| 12H             | 4H   | 15.99            | 16.68 | 16.47 | 17.16 | 17.63 | 12.29          | 12.98 | 12.77 | 13.46 | 13.93 |
|                 | 6H   | 16.62            | 17.20 | 17.14 | 17.71 | 18.20 | 12.90          | 13.47 | 13.41 | 13.98 | 14.47 |
|                 | 8H   | 16.91            | 17.42 | 17.42 | 17.91 | 18.47 | 13.17          | 13.68 | 13.68 | 14.17 | 14.74 |