

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: P930539

Luminaire Tested: DFN2DS-PN3F0-040DS940-FLL

Issue Date: 11/20/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P930539  
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-PN3F0-040DS940-FLL  
Description: 3 foot, Pentagon Define Geo, with Direct Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

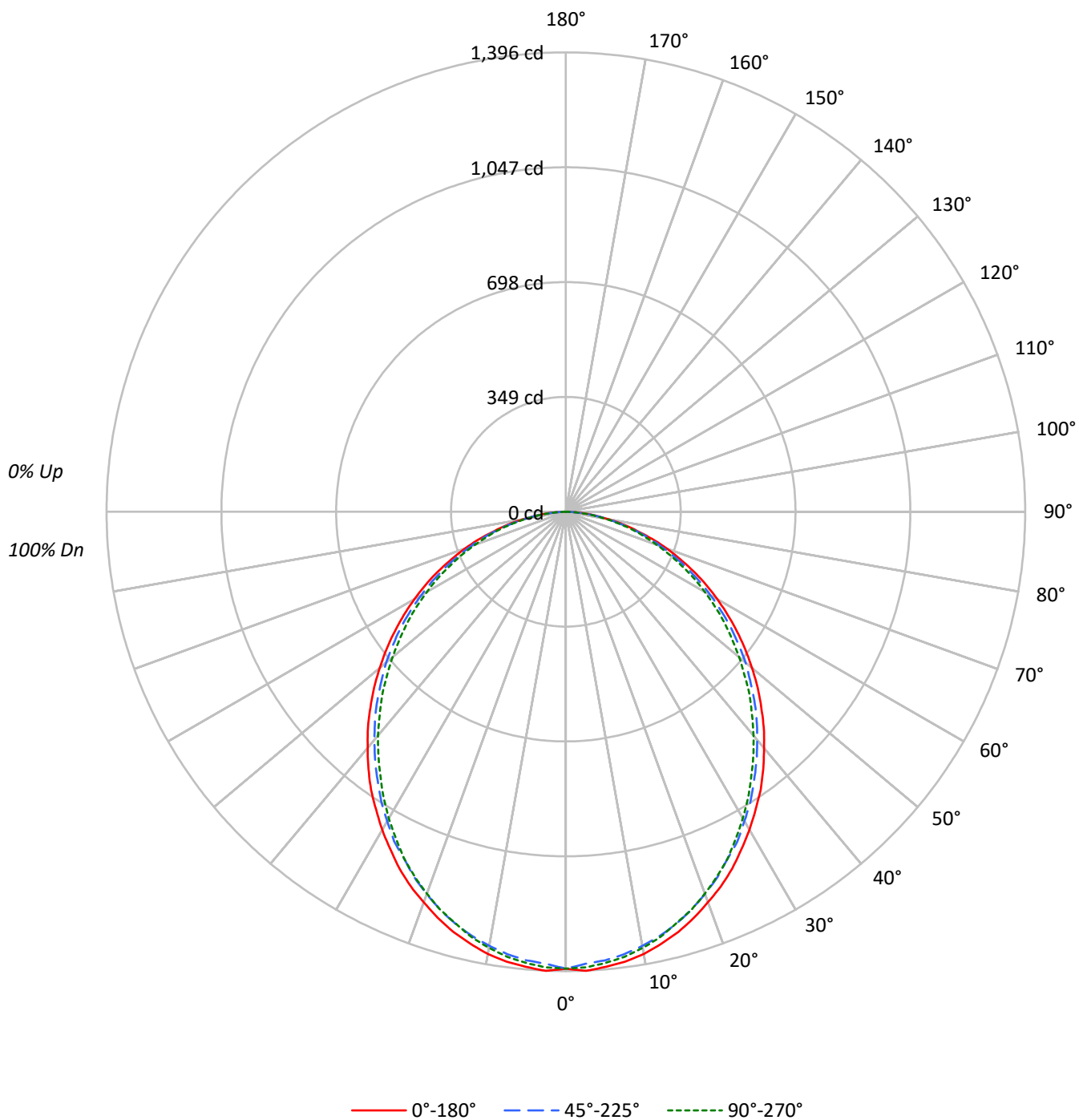
Lumens per Lamp: N/A  
Luminaire Lumens: 3532.3 lumens  
Efficiency: N/A  
Efficacy: 90.8 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
Luminous Opening: Rectangular (W 3.11' x L: 2.96' x H: 0')  
CIE Type: Direct

Input Watts (W): 38.9  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9972  
Total Harmonic Distortion (THDi): 0.128  
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°  | 1623 | 1623 | 1623 |
| 5°  | 1629 | 1606 | 1615 |
| 10° | 1620 | 1590 | 1597 |
| 15° | 1599 | 1569 | 1567 |
| 20° | 1571 | 1538 | 1536 |
| 25° | 1543 | 1500 | 1500 |
| 30° | 1507 | 1465 | 1452 |
| 35° | 1473 | 1423 | 1402 |
| 40° | 1430 | 1381 | 1355 |
| 45° | 1388 | 1340 | 1307 |
| 50° | 1343 | 1296 | 1250 |
| 55° | 1295 | 1246 | 1200 |
| 60° | 1242 | 1186 | 1142 |
| 65° | 1186 | 1126 | 1075 |
| 70° | 1114 | 1054 | 1004 |
| 75° | 1013 | 971  | 947  |
| 80° | 899  | 871  | 827  |
| 85° | 734  | 699  | 626  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 1388 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 130.7  | 3.7       |
| 10°-20°   | 367.6  | 10.4      |
| 20°-30°   | 540.3  | 15.3      |
| 30°-40°   | 627.5  | 17.8      |
| 40°-50°   | 626.8  | 17.7      |
| 50°-60°   | 546.5  | 15.5      |
| 60°-70°   | 404.0  | 11.4      |
| 70°-80°   | 228.6  | 6.5       |
| 80°-90°   | 60.3   | 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°    | 1038.6 | 29.4      |
| 0°-40°    | 1666.2 | 47.2      |
| 0°-60°    | 2839.4 | 80.4      |
| 0°-90°    | 3532.3 | 100.0     |
| 90°-120°  | 0.0    | 0.0       |
| 90°-150°  | 0.0    | 0.0       |
| 90°-180°  | 0.0    | 0.0       |
| 0°-180°   | 3532.3 | 100.0     |

**CANDELA DISTRIBUTION:**

|     | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|-----|------|-------|------|-------|------|------|
| 0°  | 1388 | 1388  | 1388 | 1388  | 1388 |      |
| 5°  | 1388 | 1383  | 1368 | 1379  | 1376 | 132  |
| 15° | 1322 | 1314  | 1296 | 1302  | 1295 | 372  |
| 25° | 1196 | 1186  | 1163 | 1165  | 1163 | 550  |
| 35° | 1032 | 1019  | 997  | 989   | 982  | 644  |
| 45° | 840  | 830   | 810  | 796   | 790  | 648  |
| 55° | 636  | 627   | 612  | 595   | 589  | 568  |
| 65° | 429  | 420   | 407  | 395   | 389  | 424  |
| 75° | 224  | 222   | 215  | 207   | 210  | 239  |
| 85° | 55   | 53    | 52   | 48    | 47   | 64   |
| 90° | 0    | 0     | 0    | 0     | 0    |      |

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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|-------|--------|--------|--------|--------|--------|
| 0°    | 1388.3 | 1388.3 | 1388.3 | 1388.3 | 1388.3 |
| 2.5°  | 1396.4 | 1389.7 | 1375.0 | 1388.3 | 1385.8 |
| 5°    | 1388.3 | 1383.0 | 1368.3 | 1378.9 | 1376.4 |
| 7.5°  | 1378.9 | 1371.0 | 1356.3 | 1367.1 | 1364.4 |
| 10°   | 1364.4 | 1355.0 | 1339.1 | 1349.7 | 1345.7 |
| 12.5° | 1344.2 | 1336.3 | 1320.3 | 1327.0 | 1324.3 |
| 15°   | 1321.6 | 1313.6 | 1296.3 | 1301.6 | 1295.0 |
| 17.5° | 1293.6 | 1285.6 | 1268.2 | 1274.8 | 1268.2 |
| 20°   | 1262.8 | 1254.9 | 1236.2 | 1240.1 | 1235.0 |
| 22.5° | 1232.2 | 1220.2 | 1202.8 | 1202.8 | 1200.1 |
| 25°   | 1196.1 | 1185.5 | 1162.8 | 1165.4 | 1162.8 |
| 27.5° | 1156.0 | 1146.7 | 1129.5 | 1125.4 | 1118.8 |
| 30°   | 1116.1 | 1105.4 | 1085.4 | 1081.4 | 1076.0 |
| 32.5° | 1073.3 | 1065.4 | 1044.0 | 1036.0 | 1030.5 |
| 35°   | 1032.0 | 1018.7 | 997.3  | 989.2  | 982.5  |
| 37.5° | 985.2  | 973.2  | 951.8  | 942.5  | 935.8  |
| 40°   | 937.2  | 926.4  | 905.0  | 893.2  | 887.8  |
| 42.5° | 890.5  | 879.7  | 858.5  | 845.0  | 837.1  |
| 45°   | 839.7  | 830.5  | 810.3  | 795.8  | 790.3  |
| 47.5° | 790.3  | 780.9  | 759.6  | 744.9  | 737.0  |
| 50°   | 738.2  | 731.5  | 712.9  | 694.2  | 687.5  |
| 52.5° | 687.5  | 678.2  | 660.9  | 646.2  | 636.8  |
| 55°   | 635.6  | 627.4  | 611.5  | 595.4  | 588.8  |
| 57.5° | 583.4  | 576.8  | 559.3  | 543.3  | 538.0  |
| 60°   | 531.3  | 526.0  | 507.4  | 492.7  | 488.6  |
| 62.5° | 480.6  | 471.2  | 458.0  | 444.6  | 439.2  |
| 65°   | 428.6  | 420.5  | 407.2  | 395.2  | 388.6  |
| 67.5° | 375.2  | 368.4  | 356.5  | 347.2  | 341.8  |
| 70°   | 325.8  | 320.4  | 308.4  | 299.0  | 293.7  |
| 72.5° | 275.1  | 269.7  | 263.1  | 253.7  | 249.7  |
| 75°   | 224.2  | 221.7  | 214.9  | 206.9  | 209.6  |
| 77.5° | 178.8  | 173.5  | 170.8  | 166.8  | 162.9  |
| 80°   | 133.5  | 132.1  | 129.4  | 125.5  | 122.8  |
| 82.5° | 90.8   | 90.8   | 89.6   | 84.1   | 84.1   |
| 85°   | 54.7   | 53.4   | 52.1   | 48.0   | 46.7   |
| 87.5° | 24.1   | 21.4   | 18.7   | 14.7   | 13.3   |
| 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 | 12.97            | 14.58 | 13.33 | 14.89 | 15.20 | 12.52          | 14.13 | 12.89 | 14.45 | 14.76 |
|                 | 3H   | 14.72            | 16.17 | 15.09 | 16.50 | 16.86 | 14.22          | 15.68 | 14.60 | 16.01 | 16.37 |
|                 | 4H   | 15.36            | 16.73 | 15.76 | 17.08 | 17.45 | 14.87          | 16.24 | 15.26 | 16.58 | 16.96 |
|                 | 6H   | 15.83            | 17.10 | 16.24 | 17.46 | 17.85 | 15.33          | 16.60 | 15.74 | 16.96 | 17.35 |
|                 | 8H   | 15.97            | 17.18 | 16.40 | 17.57 | 17.97 | 15.47          | 16.68 | 15.90 | 17.07 | 17.47 |
|                 | 12H  | 16.06            | 17.22 | 16.49 | 17.61 | 18.03 | 15.55          | 16.71 | 15.98 | 17.09 | 17.52 |
| 4H              | 2H   | 13.53            | 14.89 | 13.92 | 15.24 | 15.62 | 13.17          | 14.54 | 13.57 | 14.89 | 15.27 |
|                 | 3H   | 15.50            | 16.65 | 15.91 | 17.04 | 17.44 | 15.09          | 16.24 | 15.50 | 16.64 | 17.04 |
|                 | 4H   | 16.28            | 17.31 | 16.71 | 17.73 | 18.16 | 15.85          | 16.89 | 16.28 | 17.30 | 17.74 |
|                 | 6H   | 16.87            | 17.78 | 17.33 | 18.22 | 18.68 | 16.44          | 17.35 | 16.90 | 17.79 | 18.24 |
|                 | 8H   | 17.06            | 17.91 | 17.52 | 18.35 | 18.82 | 16.62          | 17.47 | 17.09 | 17.91 | 18.38 |
|                 | 12H  | 17.19            | 17.95 | 17.68 | 18.43 | 18.90 | 16.74          | 17.50 | 17.22 | 17.98 | 18.45 |
| 8H              | 4H   | 16.55            | 17.40 | 17.01 | 17.84 | 18.31 | 16.18          | 17.02 | 16.64 | 17.47 | 17.93 |
|                 | 6H   | 17.26            | 17.97 | 17.76 | 18.46 | 18.93 | 16.88          | 17.59 | 17.38 | 18.07 | 18.55 |
|                 | 8H   | 17.52            | 18.15 | 18.03 | 18.66 | 19.15 | 17.13          | 17.76 | 17.64 | 18.27 | 18.76 |
|                 | 12H  | 17.72            | 18.28 | 18.23 | 18.77 | 19.33 | 17.31          | 17.87 | 17.82 | 18.36 | 18.92 |
| 12H             | 4H   | 16.58            | 17.34 | 17.06 | 17.81 | 18.28 | 16.21          | 16.97 | 16.69 | 17.45 | 17.92 |
|                 | 6H   | 17.31            | 17.94 | 17.82 | 18.45 | 18.93 | 16.94          | 17.57 | 17.45 | 18.08 | 18.57 |
|                 | 8H   | 17.62            | 18.18 | 18.13 | 18.67 | 19.23 | 17.25          | 17.80 | 17.75 | 18.29 | 18.86 |