

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: P929936

Luminaire Tested: DFN2DS-4P4F0-030DS840-RLL

Issue Date: 11/20/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P929936  
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-4P4F0-030DS840-RLL  
Description: 4 foot, 90deg - 4way Define Geo, with Direct 1in Regressed Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

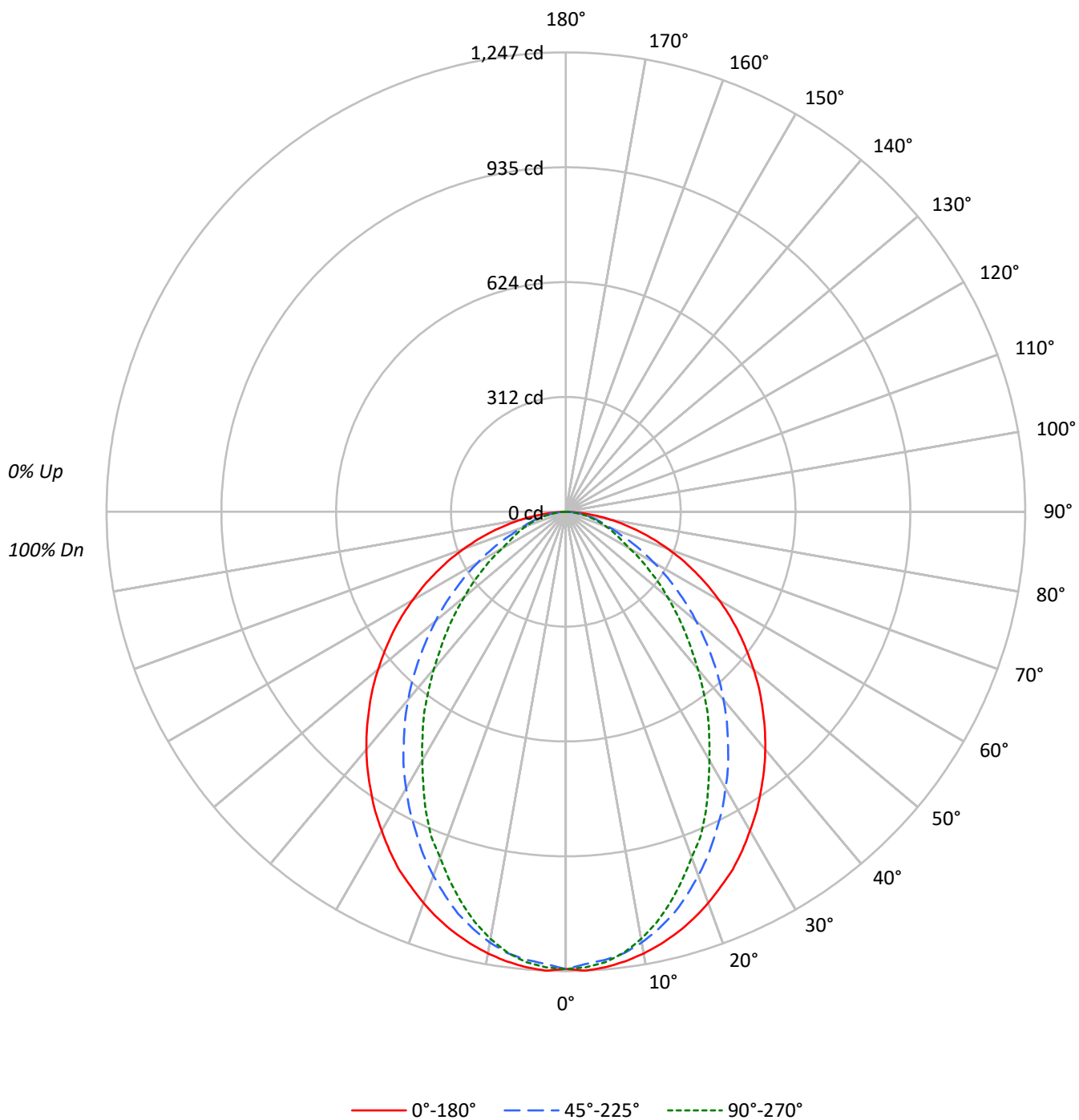
Lumens per Lamp: N/A  
Luminaire Lumens: 2552.5 lumens  
Efficiency: N/A  
Efficacy: 90.5 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular (W 4.07' x L: 4.07' x H: 0')  
CIE Type: Direct

Input Watts (W): 28.2  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.983  
Total Harmonic Distortion (THDi): 0.073  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT

TEST NUMBER: P929936

CATALOG NUMBER: DFN2DS-4P4F0-030DS840-RLL

### Luminous Intensity Polar Plot



TEST NUMBER: P929936

CATALOG NUMBER: DFN2DS-4P4F0-030DS840-RLL

**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°  | 805 | 805 | 805 |
| 5°  | 808 | 795 | 799 |
| 10° | 802 | 782 | 775 |
| 15° | 793 | 759 | 737 |
| 20° | 780 | 726 | 689 |
| 25° | 767 | 688 | 643 |
| 30° | 749 | 650 | 584 |
| 35° | 731 | 608 | 532 |
| 40° | 713 | 564 | 472 |
| 45° | 693 | 515 | 417 |
| 50° | 671 | 466 | 364 |
| 55° | 649 | 413 | 313 |
| 60° | 624 | 357 | 259 |
| 65° | 595 | 300 | 236 |
| 70° | 560 | 247 | 217 |
| 75° | 518 | 225 | 203 |
| 80° | 457 | 201 | 185 |
| 85° | 359 | 159 | 159 |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 693 cd/sqm

TEST NUMBER: P929936

CATALOG NUMBER: DFN2DS-4P4F0-030DS840-RLL

**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 116.3  | 4.6       |
| 10°-20°   | 319.3  | 12.5      |
| 20°-30°   | 448.3  | 17.6      |
| 30°-40°   | 488.7  | 19.1      |
| 40°-50°   | 449.2  | 17.6      |
| 50°-60°   | 352.7  | 13.8      |
| 60°-70°   | 229.6  | 9.0       |
| 70°-80°   | 118.2  | 4.6       |
| 80°-90°   | 30.2   | 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°    | 884.0  | 34.6      |
| 0°-40°    | 1372.7 | 53.8      |
| 0°-60°    | 2174.6 | 85.2      |
| 0°-90°    | 2552.5 | 100.0     |
| 90°-120°  | 0.0    | 0.0       |
| 90°-150°  | 0.0    | 0.0       |
| 90°-180°  | 0.0    | 0.0       |
| 0°-180°   | 2552.5 | 100.0     |

**CANDELA DISTRIBUTION:**

|     | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|-----|------|-------|------|-------|------|------|
| 0°  | 1241 | 1241  | 1241 | 1241  | 1241 |      |
| 5°  | 1241 | 1236  | 1221 | 1231  | 1228 | 118  |
| 15° | 1180 | 1168  | 1130 | 1109  | 1097 | 333  |
| 25° | 1072 | 1036  | 962  | 915   | 898  | 493  |
| 35° | 923  | 866   | 767  | 696   | 672  | 578  |
| 45° | 755  | 680   | 562  | 482   | 455  | 583  |
| 55° | 574  | 486   | 365  | 298   | 276  | 513  |
| 65° | 388  | 296   | 195  | 157   | 154  | 384  |
| 75° | 207  | 128   | 90   | 82    | 81   | 219  |
| 85° | 48   | 25    | 21   | 21    | 21   | 58   |
| 90° | 0    | 0     | 0    | 0     | 0    |      |

TEST NUMBER: P929936

CATALOG NUMBER: DFN2DS-4P4F0-030DS840-RLL

**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|-------|--------|--------|--------|--------|--------|
| 0°    | 1241.1 | 1241.1 | 1241.1 | 1241.1 | 1241.1 |
| 2.5°  | 1246.7 | 1241.1 | 1228.7 | 1240.0 | 1237.8 |
| 5°    | 1241.1 | 1235.5 | 1220.9 | 1231.0 | 1227.6 |
| 7.5°  | 1231.0 | 1224.3 | 1208.6 | 1213.0 | 1207.4 |
| 10°   | 1217.5 | 1209.7 | 1187.3 | 1183.8 | 1177.2 |
| 12.5° | 1200.7 | 1190.6 | 1160.3 | 1153.6 | 1141.1 |
| 15°   | 1180.5 | 1168.1 | 1129.9 | 1108.6 | 1097.4 |
| 17.5° | 1156.9 | 1138.9 | 1091.7 | 1067.1 | 1049.0 |
| 20°   | 1129.9 | 1107.4 | 1051.3 | 1023.3 | 998.5  |
| 22.5° | 1100.8 | 1074.9 | 1009.7 | 971.6  | 954.8  |
| 25°   | 1071.6 | 1035.5 | 961.5  | 915.4  | 898.5  |
| 27.5° | 1036.7 | 998.5  | 916.5  | 863.8  | 837.8  |
| 30°   | 999.7  | 957.0  | 867.1  | 809.9  | 779.5  |
| 32.5° | 963.7  | 912.0  | 820.0  | 752.6  | 724.4  |
| 35°   | 923.3  | 866.0  | 767.2  | 696.4  | 671.7  |
| 37.5° | 884.0  | 822.1  | 717.7  | 640.1  | 612.2  |
| 40°   | 842.4  | 775.1  | 666.1  | 586.3  | 557.2  |
| 42.5° | 799.7  | 727.9  | 614.4  | 531.2  | 503.2  |
| 45°   | 754.9  | 679.5  | 561.7  | 481.8  | 454.9  |
| 47.5° | 712.1  | 632.4  | 511.1  | 431.2  | 406.6  |
| 50°   | 665.0  | 585.2  | 461.7  | 384.1  | 360.6  |
| 52.5° | 618.8  | 534.6  | 414.5  | 340.3  | 319.0  |
| 55°   | 573.9  | 486.3  | 365.0  | 297.7  | 276.4  |
| 57.5° | 527.9  | 438.0  | 321.3  | 258.4  | 240.3  |
| 60°   | 480.7  | 390.9  | 275.2  | 217.9  | 200.0  |
| 62.5° | 434.7  | 344.8  | 235.8  | 182.0  | 173.1  |
| 65°   | 387.5  | 296.5  | 195.4  | 157.3  | 153.9  |
| 67.5° | 342.6  | 251.6  | 157.3  | 138.1  | 134.7  |
| 70°   | 295.4  | 207.8  | 130.2  | 119.0  | 114.5  |
| 72.5° | 250.5  | 167.3  | 108.9  | 100.0  | 97.7   |
| 75°   | 206.6  | 128.0  | 89.9   | 82.0   | 80.9   |
| 77.5° | 162.9  | 90.9   | 70.8   | 66.3   | 64.0   |
| 80°   | 122.4  | 65.2   | 53.9   | 49.4   | 49.4   |
| 82.5° | 85.3   | 43.8   | 37.0   | 34.8   | 34.8   |
| 85°   | 48.2   | 24.6   | 21.3   | 21.3   | 21.3   |
| 87.5° | 18.0   | 8.9    | 8.9    | 7.9    | 7.9    |
| 90°   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |

TEST NUMBER: P929936

CATALOG NUMBER: DFN2DS-4P4F0-030DS840-RLL

**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 | 10.48            | 12.00 | 10.85 | 12.32 | 12.63 | 6.44           | 7.96  | 6.81  | 8.28  | 8.59  |
|                 | 3H   | 12.25            | 13.61 | 12.62 | 13.94 | 14.30 | 7.71           | 9.07  | 8.09  | 9.40  | 9.76  |
|                 | 4H   | 12.91            | 14.19 | 13.31 | 14.54 | 14.92 | 8.21           | 9.49  | 8.61  | 9.84  | 10.22 |
|                 | 6H   | 13.40            | 14.59 | 13.81 | 14.95 | 15.34 | 8.59           | 9.77  | 9.00  | 10.14 | 10.53 |
|                 | 8H   | 13.57            | 14.69 | 13.99 | 15.08 | 15.48 | 8.71           | 9.84  | 9.14  | 10.23 | 10.63 |
|                 | 12H  | 13.67            | 14.75 | 14.10 | 15.13 | 15.56 | 8.80           | 9.87  | 9.23  | 10.26 | 10.68 |
| 4H              | 2H   | 10.59            | 11.87 | 10.98 | 12.21 | 12.59 | 7.14           | 8.42  | 7.54  | 8.77  | 9.15  |
|                 | 3H   | 12.52            | 13.58 | 12.93 | 13.98 | 14.38 | 8.58           | 9.64  | 8.99  | 10.04 | 10.44 |
|                 | 4H   | 13.27            | 14.22 | 13.70 | 14.64 | 15.08 | 9.18           | 10.14 | 9.61  | 10.55 | 10.99 |
|                 | 6H   | 13.86            | 14.69 | 14.32 | 15.13 | 15.59 | 9.67           | 10.50 | 10.13 | 10.94 | 11.40 |
|                 | 8H   | 14.07            | 14.85 | 14.54 | 15.30 | 15.76 | 9.83           | 10.61 | 10.29 | 11.05 | 11.52 |
|                 | 12H  | 14.23            | 14.92 | 14.71 | 15.40 | 15.87 | 9.95           | 10.64 | 10.43 | 11.12 | 11.59 |
| 8H              | 4H   | 13.29            | 14.07 | 13.76 | 14.51 | 14.98 | 9.53           | 10.31 | 10.00 | 10.76 | 11.22 |
|                 | 6H   | 13.93            | 14.57 | 14.43 | 15.06 | 15.54 | 10.12          | 10.76 | 10.62 | 11.25 | 11.73 |
|                 | 8H   | 14.18            | 14.76 | 14.69 | 15.27 | 15.75 | 10.34          | 10.92 | 10.86 | 11.43 | 11.92 |
|                 | 12H  | 14.38            | 14.89 | 14.89 | 15.39 | 15.95 | 10.52          | 11.03 | 11.03 | 11.52 | 12.09 |
| 12H             | 4H   | 13.28            | 13.97 | 13.76 | 14.45 | 14.92 | 9.58           | 10.27 | 10.06 | 10.75 | 11.22 |
|                 | 6H   | 13.91            | 14.49 | 14.42 | 15.00 | 15.49 | 10.18          | 10.76 | 10.70 | 11.27 | 11.76 |
|                 | 8H   | 14.19            | 14.70 | 14.70 | 15.20 | 15.76 | 10.46          | 10.97 | 10.97 | 11.46 | 12.02 |