

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: P931453

Luminaire Tested: DFN2DS-TR4F0-040DS930-FLL

Issue Date: 11/20/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P931453  
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-TR4F0-040DS930-FLL  
Description: 4 foot, Triangle Define Geo, with Direct Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

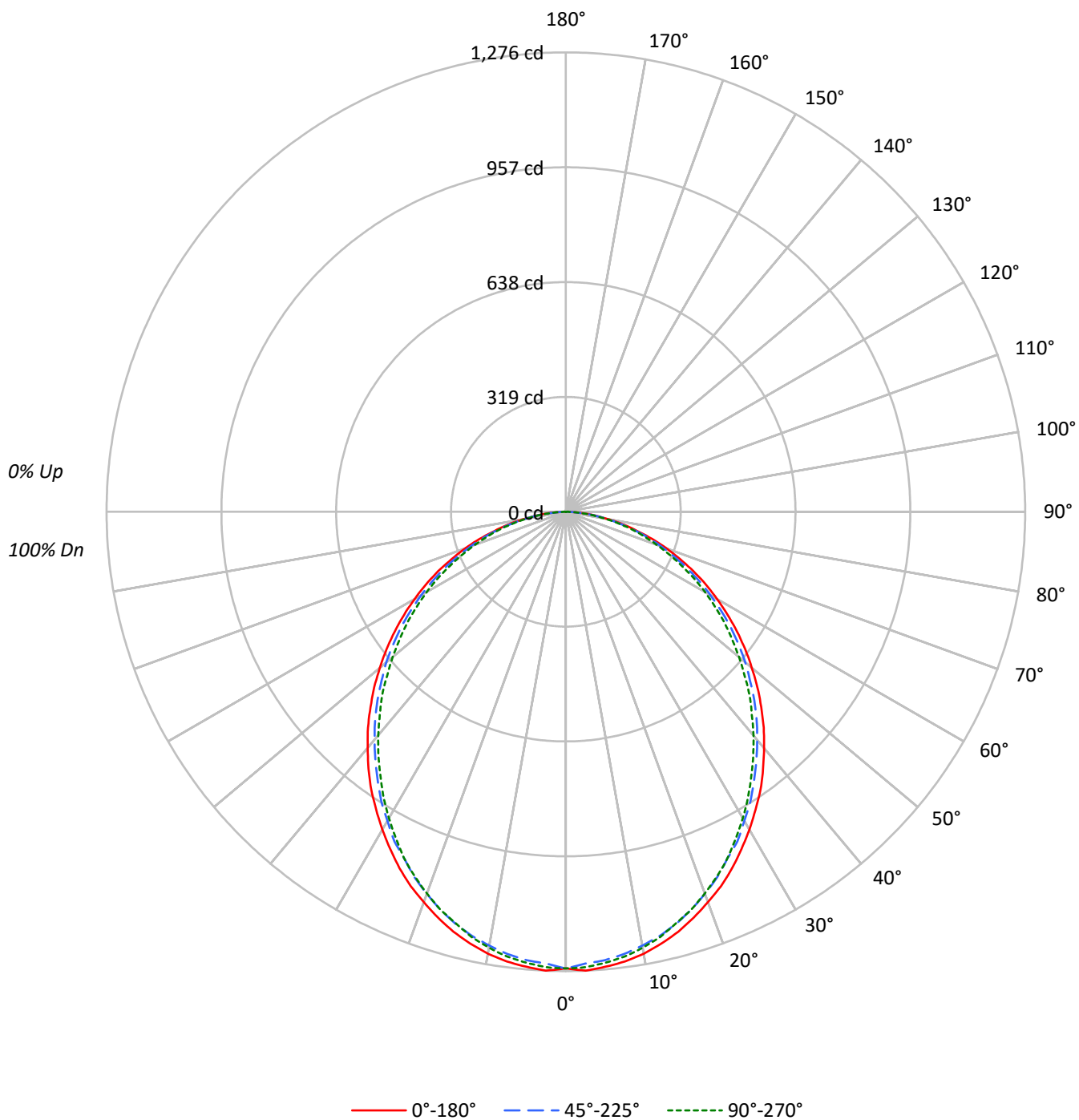
Lumens per Lamp: N/A  
Luminaire Lumens: 3227.4 lumens  
Efficiency: N/A  
Efficacy: 84.5 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
Luminous Opening: Rectangular (W 3.96' x L: 3.43' x H: 0')  
CIE Type: Direct

Input Watts (W): 38.2  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9952  
Total Harmonic Distortion (THDi): 0.069  
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  |     |     | 0   |
| RW  | 70  | 50  | 30  | 10  | 70  | 50  | 30  | 10  | 50  | 30  | 10  |  | 50  | 30  | 10  |  | 50  | 30  | 10  | 0   |
| RCR |     |     |     |     |     |     |     |     |     |     |     |  |     |     |     |  |     |     |     |     |
| 0   | 119 | 119 | 119 | 119 | 116 | 116 | 116 | 116 | 111 | 111 | 111 |  | 106 | 106 | 106 |  | 102 | 102 | 102 | 100 |
| 1   | 109 | 104 | 100 | 96  | 106 | 102 | 98  | 95  | 98  | 95  | 92  |  | 94  | 91  | 89  |  | 90  | 88  | 86  | 84  |
| 2   | 99  | 91  | 85  | 79  | 97  | 89  | 83  | 78  | 86  | 81  | 76  |  | 83  | 78  | 74  |  | 80  | 76  | 73  | 71  |
| 3   | 91  | 80  | 72  | 66  | 88  | 79  | 71  | 65  | 76  | 69  | 64  |  | 73  | 68  | 63  |  | 71  | 66  | 62  | 60  |
| 4   | 83  | 71  | 63  | 56  | 81  | 70  | 62  | 56  | 68  | 61  | 55  |  | 65  | 59  | 54  |  | 63  | 58  | 54  | 51  |
| 5   | 77  | 64  | 55  | 49  | 75  | 63  | 55  | 48  | 61  | 53  | 48  |  | 59  | 52  | 47  |  | 57  | 51  | 47  | 45  |
| 6   | 71  | 58  | 49  | 43  | 69  | 57  | 48  | 42  | 55  | 48  | 42  |  | 53  | 47  | 42  |  | 52  | 46  | 41  | 39  |
| 7   | 66  | 52  | 44  | 38  | 64  | 52  | 43  | 38  | 50  | 43  | 37  |  | 49  | 42  | 37  |  | 47  | 41  | 37  | 35  |
| 8   | 61  | 48  | 40  | 34  | 60  | 47  | 39  | 34  | 46  | 39  | 33  |  | 45  | 38  | 33  |  | 44  | 38  | 33  | 31  |
| 9   | 57  | 44  | 36  | 30  | 56  | 43  | 36  | 30  | 42  | 35  | 30  |  | 41  | 35  | 30  |  | 40  | 34  | 30  | 28  |
| 10  | 54  | 41  | 33  | 28  | 53  | 40  | 33  | 28  | 39  | 32  | 27  |  | 38  | 32  | 27  |  | 37  | 32  | 27  | 26  |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 1008 | 1008 | 1008 |
| 5°  | 1012 | 997  | 1003 |
| 10° | 1006 | 987  | 992  |
| 15° | 993  | 974  | 973  |
| 20° | 975  | 955  | 954  |
| 25° | 958  | 931  | 931  |
| 30° | 935  | 910  | 902  |
| 35° | 914  | 884  | 871  |
| 40° | 888  | 858  | 841  |
| 45° | 862  | 832  | 811  |
| 50° | 834  | 805  | 776  |
| 55° | 804  | 774  | 745  |
| 60° | 771  | 737  | 709  |
| 65° | 736  | 699  | 667  |
| 70° | 691  | 654  | 623  |
| 75° | 629  | 603  | 588  |
| 80° | 558  | 541  | 513  |
| 85° | 456  | 434  | 389  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 862 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 119.4  | 3.7       |
| 10°-20°   | 335.9  | 10.4      |
| 20°-30°   | 493.7  | 15.3      |
| 30°-40°   | 573.4  | 17.8      |
| 40°-50°   | 572.7  | 17.7      |
| 50°-60°   | 499.3  | 15.5      |
| 60°-70°   | 369.1  | 11.4      |
| 70°-80°   | 208.8  | 6.5       |
| 80°-90°   | 55.1   | 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°    | 949.0  | 29.4      |
| 0°-40°    | 1522.3 | 47.2      |
| 0°-60°    | 2594.3 | 80.4      |
| 0°-90°    | 3227.4 | 100.0     |
| 90°-120°  | 0.0    | 0.0       |
| 90°-150°  | 0.0    | 0.0       |
| 90°-180°  | 0.0    | 0.0       |
| 0°-180°   | 3227.4 | 100.0     |

**CANDELA DISTRIBUTION:**

|     | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|-----|------|-------|------|-------|------|------|
| 0°  | 1268 | 1268  | 1268 | 1268  | 1268 |      |
| 5°  | 1268 | 1264  | 1250 | 1260  | 1258 | 120  |
| 15° | 1208 | 1200  | 1184 | 1189  | 1183 | 340  |
| 25° | 1093 | 1083  | 1062 | 1065  | 1062 | 503  |
| 35° | 943  | 931   | 911  | 904   | 898  | 589  |
| 45° | 767  | 759   | 740  | 727   | 722  | 592  |
| 55° | 581  | 573   | 559  | 544   | 538  | 519  |
| 65° | 392  | 384   | 372  | 361   | 355  | 387  |
| 75° | 205  | 202   | 196  | 189   | 192  | 219  |
| 85° | 50   | 49    | 48   | 44    | 43   | 59   |
| 90° | 0    | 0     | 0    | 0     | 0    |      |

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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|-------|--------|--------|--------|--------|--------|
| 0°    | 1268.5 | 1268.5 | 1268.5 | 1268.5 | 1268.5 |
| 2.5°  | 1275.9 | 1269.8 | 1256.3 | 1268.5 | 1266.2 |
| 5°    | 1268.5 | 1263.7 | 1250.2 | 1259.9 | 1257.6 |
| 7.5°  | 1259.9 | 1252.7 | 1239.2 | 1249.1 | 1246.6 |
| 10°   | 1246.6 | 1238.1 | 1223.5 | 1233.2 | 1229.5 |
| 12.5° | 1228.2 | 1221.0 | 1206.4 | 1212.5 | 1209.9 |
| 15°   | 1207.5 | 1200.3 | 1184.4 | 1189.2 | 1183.2 |
| 17.5° | 1181.9 | 1174.7 | 1158.8 | 1164.8 | 1158.8 |
| 20°   | 1153.8 | 1146.5 | 1129.5 | 1133.1 | 1128.4 |
| 22.5° | 1125.8 | 1114.8 | 1098.9 | 1098.9 | 1096.5 |
| 25°   | 1092.8 | 1083.1 | 1062.4 | 1064.8 | 1062.4 |
| 27.5° | 1056.2 | 1047.7 | 1032.0 | 1028.3 | 1022.3 |
| 30°   | 1019.7 | 1009.9 | 991.7  | 988.0  | 983.1  |
| 32.5° | 980.7  | 973.4  | 953.9  | 946.5  | 941.6  |
| 35°   | 942.9  | 930.7  | 911.2  | 903.8  | 897.7  |
| 37.5° | 900.2  | 889.2  | 869.6  | 861.1  | 855.0  |
| 40°   | 856.3  | 846.5  | 826.9  | 816.1  | 811.2  |
| 42.5° | 813.6  | 803.8  | 784.4  | 772.0  | 764.8  |
| 45°   | 767.2  | 758.8  | 740.3  | 727.1  | 722.1  |
| 47.5° | 722.1  | 713.5  | 694.1  | 680.6  | 673.4  |
| 50°   | 674.5  | 668.4  | 651.3  | 634.2  | 628.1  |
| 52.5° | 628.1  | 619.6  | 603.8  | 590.4  | 581.8  |
| 55°   | 580.7  | 573.3  | 558.7  | 544.0  | 538.0  |
| 57.5° | 533.0  | 527.0  | 511.0  | 496.4  | 491.5  |
| 60°   | 485.4  | 480.6  | 463.6  | 450.1  | 446.5  |
| 62.5° | 439.1  | 430.6  | 418.4  | 406.2  | 401.3  |
| 65°   | 391.6  | 384.2  | 372.0  | 361.0  | 355.0  |
| 67.5° | 342.8  | 336.6  | 325.8  | 317.2  | 312.3  |
| 70°   | 297.6  | 292.7  | 281.7  | 273.2  | 268.4  |
| 72.5° | 251.3  | 246.4  | 240.3  | 231.8  | 228.1  |
| 75°   | 204.9  | 202.5  | 196.3  | 189.1  | 191.5  |
| 77.5° | 163.4  | 158.5  | 156.1  | 152.4  | 148.8  |
| 80°   | 122.0  | 120.7  | 118.3  | 114.7  | 112.2  |
| 82.5° | 83.0   | 83.0   | 81.8   | 76.9   | 76.9   |
| 85°   | 50.0   | 48.8   | 47.6   | 43.8   | 42.7   |
| 87.5° | 22.0   | 19.6   | 17.1   | 13.4   | 12.1   |
| 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 | 11.31            | 12.92 | 11.67 | 13.23 | 13.55 | 10.86          | 12.48 | 11.23 | 12.79 | 13.10 |
|                 | 3H   | 13.06            | 14.51 | 13.44 | 14.84 | 15.20 | 12.57          | 14.02 | 12.95 | 14.35 | 14.71 |
|                 | 4H   | 13.71            | 15.07 | 14.10 | 15.42 | 15.80 | 13.21          | 14.58 | 13.61 | 14.93 | 15.30 |
|                 | 6H   | 14.17            | 15.44 | 14.59 | 15.81 | 16.20 | 13.67          | 14.94 | 14.08 | 15.31 | 15.70 |
|                 | 8H   | 14.32            | 15.53 | 14.74 | 15.92 | 16.32 | 13.81          | 15.03 | 14.24 | 15.41 | 15.81 |
|                 | 12H  | 14.41            | 15.57 | 14.84 | 15.95 | 16.38 | 13.90          | 15.06 | 14.33 | 15.44 | 15.87 |
| 4H              | 2H   | 11.87            | 13.24 | 12.27 | 13.59 | 13.96 | 11.52          | 12.89 | 11.91 | 13.23 | 13.61 |
|                 | 3H   | 13.84            | 14.99 | 14.25 | 15.39 | 15.79 | 13.44          | 14.58 | 13.85 | 14.98 | 15.38 |
|                 | 4H   | 14.62            | 15.66 | 15.05 | 16.07 | 16.51 | 14.20          | 15.23 | 14.63 | 15.65 | 16.08 |
|                 | 6H   | 15.22            | 16.12 | 15.67 | 16.56 | 17.02 | 14.79          | 15.69 | 15.24 | 16.13 | 16.59 |
|                 | 8H   | 15.41            | 16.25 | 15.87 | 16.70 | 17.16 | 14.97          | 15.82 | 15.43 | 16.26 | 16.72 |
|                 | 12H  | 15.54            | 16.30 | 16.02 | 16.77 | 17.24 | 15.09          | 15.85 | 15.57 | 16.32 | 16.79 |
| 8H              | 4H   | 14.89            | 15.74 | 15.36 | 16.18 | 16.65 | 14.52          | 15.37 | 14.98 | 15.81 | 16.27 |
|                 | 6H   | 15.61            | 16.31 | 16.10 | 16.80 | 17.28 | 15.23          | 15.93 | 15.72 | 16.42 | 16.89 |
|                 | 8H   | 15.87            | 16.50 | 16.38 | 17.01 | 17.49 | 15.48          | 16.11 | 15.99 | 16.61 | 17.10 |
|                 | 12H  | 16.07            | 16.63 | 16.58 | 17.12 | 17.68 | 15.66          | 16.21 | 16.16 | 16.70 | 17.26 |
| 12H             | 4H   | 14.92            | 15.68 | 15.40 | 16.16 | 16.63 | 14.56          | 15.32 | 15.04 | 15.79 | 16.26 |
|                 | 6H   | 15.65            | 16.29 | 16.16 | 16.79 | 17.28 | 15.29          | 15.92 | 15.80 | 16.42 | 16.91 |
|                 | 8H   | 15.97            | 16.53 | 16.48 | 17.02 | 17.58 | 15.59          | 16.15 | 16.10 | 16.64 | 17.20 |