

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: P931445

Luminaire Tested: DFN2DS-TR4F0-040DS835-FLL

Issue Date: 11/20/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P931445  
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-TR4F0-040DS835-FLL  
Description: 4 foot, Triangle Define Geo, with Direct Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

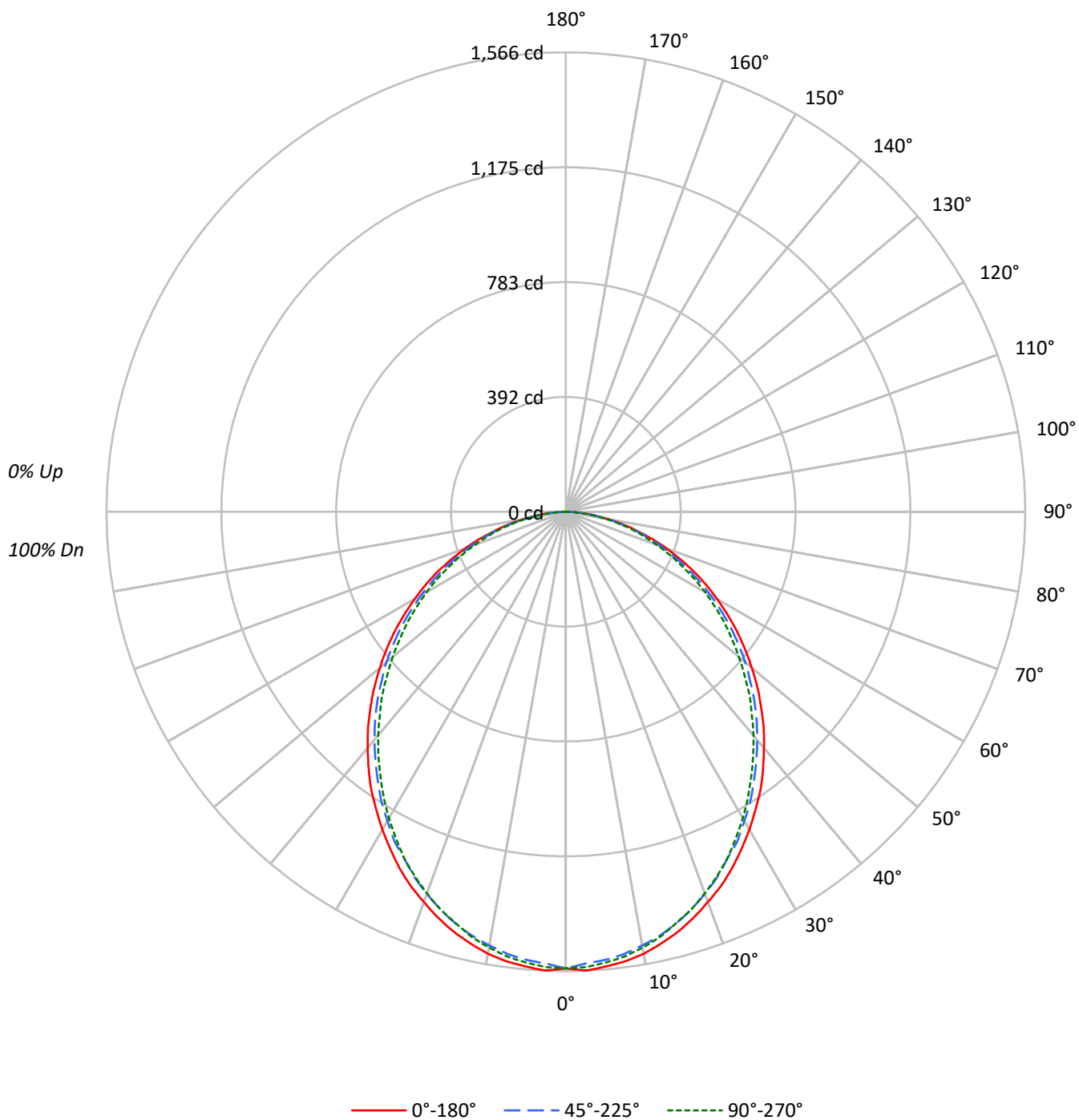
Lumens per Lamp: N/A  
Luminaire Lumens: 3960.0 lumens  
Efficiency: N/A  
Efficacy: 103.7 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
Luminous Opening: Rectangular (W 3.96' x L: 3.43' x H: 0')  
CIE Type: Direct

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  |
| 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°  | 1236 | 1236 | 1236 |
| 5°  | 1241 | 1223 | 1231 |
| 10° | 1234 | 1211 | 1217 |
| 15° | 1219 | 1195 | 1194 |
| 20° | 1197 | 1172 | 1170 |
| 25° | 1175 | 1143 | 1143 |
| 30° | 1148 | 1116 | 1107 |
| 35° | 1122 | 1084 | 1068 |
| 40° | 1090 | 1052 | 1032 |
| 45° | 1058 | 1021 | 995  |
| 50° | 1023 | 988  | 953  |
| 55° | 987  | 949  | 914  |
| 60° | 946  | 904  | 870  |
| 65° | 903  | 858  | 819  |
| 70° | 848  | 803  | 765  |
| 75° | 772  | 739  | 721  |
| 80° | 685  | 664  | 630  |
| 85° | 559  | 532  | 478  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 1058 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 146.5  | 3.7       |
| 10°-20°   | 412.2  | 10.4      |
| 20°-30°   | 605.7  | 15.3      |
| 30°-40°   | 703.5  | 17.8      |
| 40°-50°   | 702.6  | 17.7      |
| 50°-60°   | 612.7  | 15.5      |
| 60°-70°   | 452.9  | 11.4      |
| 70°-80°   | 256.2  | 6.5       |
| 80°-90°   | 67.6   | 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°    | 1164.4 | 29.4      |
| 0°-40°    | 1867.9 | 47.2      |
| 0°-60°    | 3183.2 | 80.4      |
| 0°-90°    | 3960.0 | 100.0     |
| 90°-120°  | 0.0    | 0.0       |
| 90°-150°  | 0.0    | 0.0       |
| 90°-180°  | 0.0    | 0.0       |
| 0°-180°   | 3960.0 | 100.0     |

**CANDELA DISTRIBUTION:**

|     | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|-----|------|-------|------|-------|------|------|
| 0°  | 1556 | 1556  | 1556 | 1556  | 1556 |      |
| 5°  | 1556 | 1550  | 1534 | 1546  | 1543 | 148  |
| 15° | 1482 | 1473  | 1453 | 1459  | 1452 | 417  |
| 25° | 1341 | 1329  | 1304 | 1306  | 1304 | 617  |
| 35° | 1157 | 1142  | 1118 | 1109  | 1102 | 722  |
| 45° | 941  | 931   | 908  | 892   | 886  | 727  |
| 55° | 712  | 703   | 686  | 668   | 660  | 637  |
| 65° | 480  | 471   | 456  | 443   | 436  | 475  |
| 75° | 251  | 248   | 241  | 232   | 235  | 268  |
| 85° | 61   | 60    | 58   | 54    | 52   | 72   |
| 90° | 0    | 0     | 0    | 0     | 0    |      |

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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|-------|--------|--------|--------|--------|--------|
| 0°    | 1556.4 | 1556.4 | 1556.4 | 1556.4 | 1556.4 |
| 2.5°  | 1565.5 | 1558.0 | 1541.5 | 1556.4 | 1553.6 |
| 5°    | 1556.4 | 1550.5 | 1534.0 | 1545.9 | 1543.1 |
| 7.5°  | 1545.9 | 1537.0 | 1520.5 | 1532.6 | 1529.6 |
| 10°   | 1529.6 | 1519.1 | 1501.2 | 1513.1 | 1508.6 |
| 12.5° | 1507.0 | 1498.1 | 1480.2 | 1487.7 | 1484.6 |
| 15°   | 1481.6 | 1472.7 | 1453.2 | 1459.2 | 1451.8 |
| 17.5° | 1450.2 | 1441.3 | 1421.8 | 1429.2 | 1421.8 |
| 20°   | 1415.7 | 1406.8 | 1385.9 | 1390.3 | 1384.5 |
| 22.5° | 1381.4 | 1367.9 | 1348.4 | 1348.4 | 1345.4 |
| 25°   | 1340.9 | 1329.0 | 1303.6 | 1306.5 | 1303.6 |
| 27.5° | 1296.0 | 1285.5 | 1266.2 | 1261.7 | 1254.3 |
| 30°   | 1251.2 | 1239.2 | 1216.8 | 1212.3 | 1206.3 |
| 32.5° | 1203.3 | 1194.4 | 1170.4 | 1161.4 | 1155.3 |
| 35°   | 1156.9 | 1142.0 | 1118.0 | 1109.0 | 1101.5 |
| 37.5° | 1104.5 | 1091.0 | 1067.0 | 1056.6 | 1049.1 |
| 40°   | 1050.7 | 1038.6 | 1014.6 | 1001.3 | 995.3  |
| 42.5° | 998.3  | 986.2  | 962.4  | 947.3  | 938.4  |
| 45°   | 941.4  | 931.0  | 908.4  | 892.1  | 886.0  |
| 47.5° | 886.0  | 875.5  | 851.6  | 835.1  | 826.2  |
| 50°   | 827.6  | 820.1  | 799.2  | 778.2  | 770.7  |
| 52.5° | 770.7  | 760.3  | 740.9  | 724.4  | 713.9  |
| 55°   | 712.5  | 703.4  | 685.5  | 667.5  | 660.1  |
| 57.5° | 654.0  | 646.6  | 627.0  | 609.1  | 603.1  |
| 60°   | 595.6  | 589.7  | 568.8  | 552.3  | 547.8  |
| 62.5° | 538.8  | 528.3  | 513.4  | 498.4  | 492.4  |
| 65°   | 480.5  | 471.4  | 456.5  | 443.0  | 435.6  |
| 67.5° | 420.6  | 413.0  | 399.7  | 389.2  | 383.2  |
| 70°   | 365.2  | 359.2  | 345.7  | 335.2  | 329.3  |
| 72.5° | 308.4  | 302.3  | 294.9  | 284.4  | 279.9  |
| 75°   | 251.4  | 248.5  | 240.9  | 232.0  | 235.0  |
| 77.5° | 200.5  | 194.5  | 191.5  | 187.0  | 182.6  |
| 80°   | 149.7  | 148.1  | 145.1  | 140.7  | 137.7  |
| 82.5° | 101.8  | 101.8  | 100.4  | 94.3   | 94.3   |
| 85°   | 61.3   | 59.9   | 58.4   | 53.8   | 52.4   |
| 87.5° | 27.0   | 24.0   | 21.0   | 16.5   | 14.9   |
| 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 | 12.02            | 13.63 | 12.39 | 13.94 | 14.26 | 11.58          | 13.19 | 11.94 | 13.50 | 13.81 |
|                 | 3H   | 13.77            | 15.22 | 14.15 | 15.55 | 15.91 | 13.28          | 14.73 | 13.66 | 15.06 | 15.42 |
|                 | 4H   | 14.42            | 15.79 | 14.81 | 16.13 | 16.51 | 13.92          | 15.29 | 14.32 | 15.64 | 16.01 |
|                 | 6H   | 14.89            | 16.15 | 15.30 | 16.52 | 16.91 | 14.38          | 15.65 | 14.80 | 16.02 | 16.41 |
|                 | 8H   | 15.03            | 16.24 | 15.45 | 16.63 | 17.03 | 14.53          | 15.74 | 14.95 | 16.13 | 16.52 |
|                 | 12H  | 15.12            | 16.28 | 15.55 | 16.66 | 17.09 | 14.61          | 15.77 | 15.04 | 16.15 | 16.58 |
| 4H              | 2H   | 12.58            | 13.95 | 12.98 | 14.30 | 14.67 | 12.23          | 13.60 | 12.63 | 13.94 | 14.32 |
|                 | 3H   | 14.56            | 15.70 | 14.97 | 16.10 | 16.50 | 14.15          | 15.30 | 14.56 | 15.69 | 16.09 |
|                 | 4H   | 15.33            | 16.37 | 15.76 | 16.78 | 17.22 | 14.91          | 15.94 | 15.34 | 16.36 | 16.79 |
|                 | 6H   | 15.93            | 16.83 | 16.38 | 17.27 | 17.73 | 15.50          | 16.40 | 15.95 | 16.84 | 17.30 |
|                 | 8H   | 16.12            | 16.96 | 16.58 | 17.41 | 17.87 | 15.68          | 16.53 | 16.14 | 16.97 | 17.43 |
|                 | 12H  | 16.25            | 17.01 | 16.73 | 17.49 | 17.96 | 15.80          | 16.56 | 16.28 | 17.03 | 17.50 |
| 8H              | 4H   | 15.61            | 16.45 | 16.07 | 16.89 | 17.36 | 15.23          | 16.08 | 15.69 | 16.52 | 16.99 |
|                 | 6H   | 16.32            | 17.02 | 16.81 | 17.51 | 17.99 | 15.94          | 16.64 | 16.43 | 17.13 | 17.61 |
|                 | 8H   | 16.58            | 17.21 | 17.09 | 17.72 | 18.20 | 16.19          | 16.82 | 16.70 | 17.32 | 17.81 |
|                 | 12H  | 16.78            | 17.34 | 17.29 | 17.83 | 18.39 | 16.37          | 16.92 | 16.87 | 17.41 | 17.98 |
| 12H             | 4H   | 15.63            | 16.39 | 16.11 | 16.87 | 17.34 | 15.27          | 16.03 | 15.75 | 16.50 | 16.97 |
|                 | 6H   | 16.36            | 17.00 | 16.87 | 17.50 | 17.99 | 16.00          | 16.63 | 16.51 | 17.14 | 17.62 |
|                 | 8H   | 16.68            | 17.24 | 17.19 | 17.73 | 18.29 | 16.30          | 16.86 | 16.81 | 17.35 | 17.91 |

END OF REPORT

FIELD PERFORMANCE MAY DIFFER FROM LABORATORY PERFORMANCE

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