

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: P930850

Luminaire Tested: DFN2DS-SQ2F0-060DS830-RLL

Issue Date: 11/20/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P930850  
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-SQ2F0-060DS830-RLL  
Description: 2 foot, Square Define Geo, with Direct 1in Regressed Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

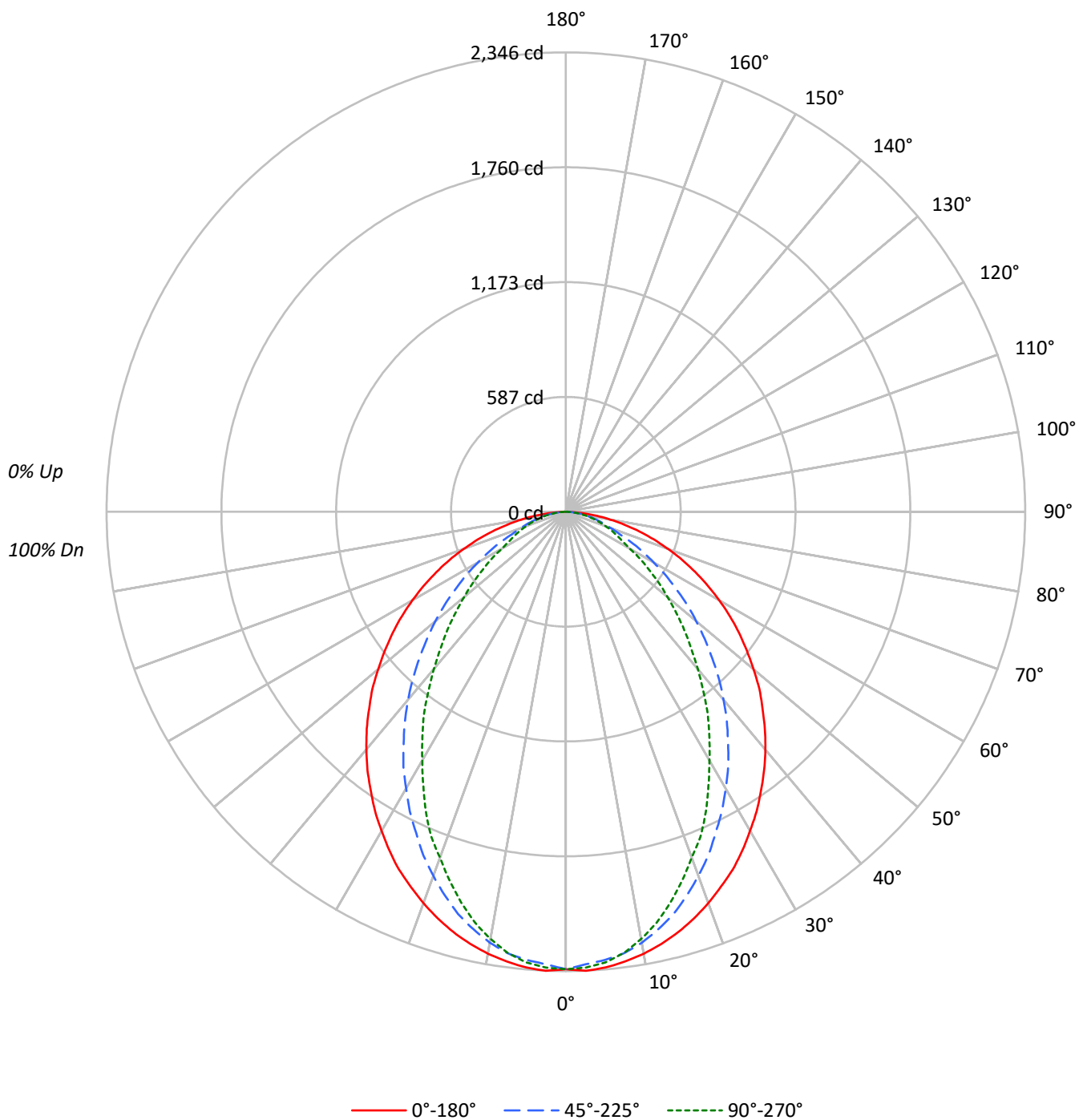
Lumens per Lamp: N/A  
Luminaire Lumens: 4804.2 lumens  
Efficiency: N/A  
Efficacy: 81.8 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular (W 2.21' x L: 2.21' x H: 0')  
CIE Type: Direct

Input Watts (W): 58.7  
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°  | 5137 | 5137 | 5137 |
| 5°  | 5156 | 5072 | 5100 |
| 10° | 5116 | 4989 | 4947 |
| 15° | 5058 | 4841 | 4702 |
| 20° | 4977 | 4630 | 4398 |
| 25° | 4893 | 4390 | 4103 |
| 30° | 4777 | 4143 | 3725 |
| 35° | 4665 | 3876 | 3393 |
| 40° | 4551 | 3598 | 3010 |
| 45° | 4418 | 3287 | 2662 |
| 50° | 4281 | 2972 | 2322 |
| 55° | 4141 | 2634 | 1994 |
| 60° | 3979 | 2278 | 1655 |
| 65° | 3795 | 1914 | 1507 |
| 70° | 3575 | 1576 | 1385 |
| 75° | 3305 | 1437 | 1294 |
| 80° | 2916 | 1284 | 1179 |
| 85° | 2291 | 1012 | 1012 |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 4418 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 218.9  | 4.6       |
| 10°-20°   | 601.0  | 12.5      |
| 20°-30°   | 843.8  | 17.6      |
| 30°-40°   | 919.8  | 19.1      |
| 40°-50°   | 845.4  | 17.6      |
| 50°-60°   | 663.9  | 13.8      |
| 60°-70°   | 432.2  | 9.0       |
| 70°-80°   | 222.5  | 4.6       |
| 80°-90°   | 56.8   | 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°    | 1663.7 | 34.6      |
| 0°-40°    | 2583.5 | 53.8      |
| 0°-60°    | 4092.8 | 85.2      |
| 0°-90°    | 4804.2 | 100.0     |
| 90°-120°  | 0.0    | 0.0       |
| 90°-150°  | 0.0    | 0.0       |
| 90°-180°  | 0.0    | 0.0       |
| 0°-180°   | 4804.2 | 100.0     |

**CANDELA DISTRIBUTION:**

|     | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|-----|------|-------|------|-------|------|------|
| 0°  | 2336 | 2336  | 2336 | 2336  | 2336 |      |
| 5°  | 2336 | 2325  | 2298 | 2317  | 2311 | 221  |
| 15° | 2222 | 2198  | 2127 | 2086  | 2065 | 626  |
| 25° | 2017 | 1949  | 1810 | 1723  | 1691 | 928  |
| 35° | 1738 | 1630  | 1444 | 1311  | 1264 | 1088 |
| 45° | 1421 | 1279  | 1057 | 907   | 856  | 1097 |
| 55° | 1080 | 915   | 687  | 560   | 520  | 965  |
| 65° | 729  | 558   | 368  | 296   | 290  | 723  |
| 75° | 389  | 241   | 169  | 154   | 152  | 411  |
| 85° | 91   | 46    | 40   | 40    | 40   | 109  |
| 90° | 0    | 0     | 0    | 0     | 0    |      |

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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|-------|--------|--------|--------|--------|--------|
| 0°    | 2336.0 | 2336.0 | 2336.0 | 2336.0 | 2336.0 |
| 2.5°  | 2346.5 | 2336.0 | 2312.6 | 2333.9 | 2329.7 |
| 5°    | 2336.0 | 2325.4 | 2297.8 | 2316.9 | 2310.6 |
| 7.5°  | 2316.9 | 2304.3 | 2274.7 | 2283.0 | 2272.5 |
| 10°   | 2291.5 | 2276.7 | 2234.6 | 2228.1 | 2215.5 |
| 12.5° | 2260.0 | 2240.8 | 2183.7 | 2171.1 | 2147.8 |
| 15°   | 2221.8 | 2198.4 | 2126.7 | 2086.5 | 2065.4 |
| 17.5° | 2177.4 | 2143.5 | 2054.7 | 2008.2 | 1974.4 |
| 20°   | 2126.7 | 2084.3 | 1978.7 | 1925.9 | 1879.3 |
| 22.5° | 2071.7 | 2023.0 | 1900.4 | 1828.6 | 1797.0 |
| 25°   | 2016.8 | 1949.1 | 1809.6 | 1723.0 | 1691.2 |
| 27.5° | 1951.4 | 1879.3 | 1725.0 | 1625.6 | 1577.0 |
| 30°   | 1881.6 | 1801.0 | 1631.9 | 1524.3 | 1467.1 |
| 32.5° | 1813.8 | 1716.5 | 1543.4 | 1416.4 | 1363.5 |
| 35°   | 1737.8 | 1629.9 | 1444.0 | 1310.7 | 1264.1 |
| 37.5° | 1663.8 | 1547.3 | 1350.9 | 1204.9 | 1152.2 |
| 40°   | 1585.5 | 1458.8 | 1253.5 | 1103.5 | 1048.5 |
| 42.5° | 1505.2 | 1370.0 | 1156.4 | 999.8  | 947.2  |
| 45°   | 1420.6 | 1278.9 | 1057.1 | 906.8  | 856.1  |
| 47.5° | 1340.4 | 1190.3 | 962.0  | 811.7  | 765.3  |
| 50°   | 1251.5 | 1101.5 | 868.9  | 722.9  | 678.7  |
| 52.5° | 1164.7 | 1006.2 | 780.1  | 640.6  | 600.4  |
| 55°   | 1080.2 | 915.3  | 687.0  | 560.3  | 520.1  |
| 57.5° | 993.6  | 824.4  | 604.7  | 486.3  | 452.3  |
| 60°   | 904.8  | 735.7  | 517.9  | 410.2  | 376.3  |
| 62.5° | 818.2  | 649.1  | 443.9  | 342.5  | 325.6  |
| 65°   | 729.4  | 558.0  | 367.9  | 296.1  | 289.6  |
| 67.5° | 644.8  | 473.4  | 296.1  | 260.0  | 253.7  |
| 70°   | 556.0  | 391.1  | 245.1  | 224.1  | 215.5  |
| 72.5° | 471.5  | 314.9  | 205.0  | 188.2  | 183.9  |
| 75°   | 389.0  | 240.9  | 169.1  | 154.3  | 152.3  |
| 77.5° | 306.6  | 171.2  | 133.2  | 124.7  | 120.5  |
| 80°   | 230.3  | 122.6  | 101.4  | 93.1   | 93.1   |
| 82.5° | 160.6  | 82.5   | 69.7   | 65.5   | 65.5   |
| 85°   | 90.8   | 46.4   | 40.1   | 40.1   | 40.1   |
| 87.5° | 33.9   | 16.9   | 16.9   | 14.8   | 14.8   |
| 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 | 16.92            | 18.44 | 17.28 | 18.75 | 19.07 | 12.88          | 14.40 | 13.25 | 14.72 | 15.03 |
|                 | 3H   | 18.68            | 20.05 | 19.06 | 20.38 | 20.74 | 14.15          | 15.51 | 14.52 | 15.84 | 16.20 |
|                 | 4H   | 19.35            | 20.63 | 19.75 | 20.98 | 21.36 | 14.65          | 15.93 | 15.05 | 16.28 | 16.66 |
|                 | 6H   | 19.84            | 21.02 | 20.25 | 21.39 | 21.78 | 15.03          | 16.21 | 15.44 | 16.58 | 16.97 |
|                 | 8H   | 20.01            | 21.13 | 20.43 | 21.52 | 21.92 | 15.15          | 16.28 | 15.58 | 16.67 | 17.07 |
|                 | 12H  | 20.11            | 21.19 | 20.54 | 21.57 | 22.00 | 15.23          | 16.31 | 15.66 | 16.69 | 17.12 |
| 4H              | 2H   | 17.02            | 18.30 | 17.42 | 18.65 | 19.03 | 13.58          | 14.86 | 13.98 | 15.21 | 15.58 |
|                 | 3H   | 18.96            | 20.02 | 19.37 | 20.42 | 20.82 | 15.02          | 16.08 | 15.43 | 16.48 | 16.88 |
|                 | 4H   | 19.71            | 20.66 | 20.14 | 21.08 | 21.52 | 15.62          | 16.58 | 16.05 | 16.99 | 17.43 |
|                 | 6H   | 20.30            | 21.13 | 20.76 | 21.57 | 22.03 | 16.11          | 16.94 | 16.56 | 17.38 | 17.84 |
|                 | 8H   | 20.51            | 21.29 | 20.98 | 21.73 | 22.20 | 16.27          | 17.05 | 16.73 | 17.49 | 17.96 |
|                 | 12H  | 20.67            | 21.36 | 21.15 | 21.84 | 22.31 | 16.39          | 17.08 | 16.87 | 17.56 | 18.03 |
| 8H              | 4H   | 19.73            | 20.51 | 20.19 | 20.95 | 21.42 | 15.97          | 16.75 | 16.44 | 17.19 | 17.66 |
|                 | 6H   | 20.37            | 21.01 | 20.86 | 21.50 | 21.98 | 16.56          | 17.20 | 17.06 | 17.69 | 18.17 |
|                 | 8H   | 20.62            | 21.20 | 21.13 | 21.70 | 22.19 | 16.78          | 17.36 | 17.29 | 17.87 | 18.36 |
|                 | 12H  | 20.82            | 21.33 | 21.33 | 21.82 | 22.39 | 16.96          | 17.47 | 17.47 | 17.96 | 18.53 |
| 12H             | 4H   | 19.72            | 20.41 | 20.20 | 20.89 | 21.36 | 16.02          | 16.71 | 16.50 | 17.19 | 17.66 |
|                 | 6H   | 20.35            | 20.93 | 20.86 | 21.44 | 21.92 | 16.62          | 17.20 | 17.14 | 17.71 | 18.20 |
|                 | 8H   | 20.63            | 21.14 | 21.14 | 21.64 | 22.20 | 16.90          | 17.41 | 17.41 | 17.90 | 18.46 |