

Scaled data based on original data using  
LM-79-08 Approved Method: Electrical and Photometric Measurements of Solid-State  
Lighting Products

Test Report Prepared for

Cooper Lighting Solutions

(formerly Eaton)

Brand: NEO-RAY

Report Number: P243384

Luminaire Tested: **S123DR-H1165D940-X4F0-XX-UDD-D-W**

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-79-08  
Report Number: P243384  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-1802-639-54)  
Test Lab: INNOVATION CENTER  
Issue Date: 3/3/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: NEO-RAY  
Catalog Number: S123DR-H1165D940-X4F0-XX-UDD-D-W  
Description: DEFINE 3 DIRECT RECESSED WITH SATIN DROP DIFFUSER.  
HIGH PERFORMANCE LIGHT ENGINE  
Light Source: (184) 4000K CCT, 90 CRI LEDS  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 4082.7 lumens  
Efficiency: N/A  
Efficacy: 108.3 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.26 / 1.37  
Luminous Opening: Rectangular w/ Sides (W: 0.23' x L: 3.88' x H: 0.08')  
CIE Type: Direct

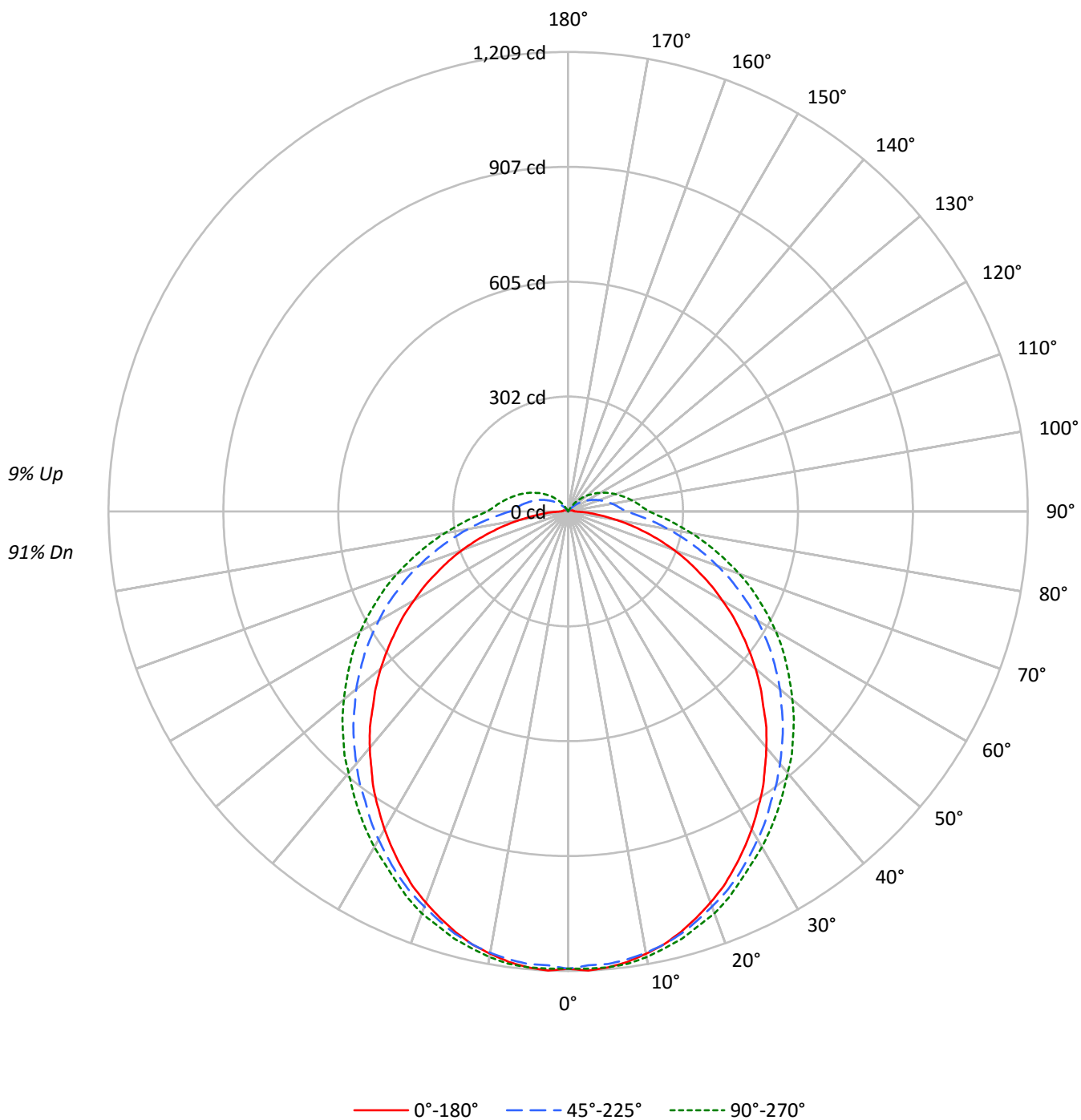
Input Watts (W): 37.7  
Input Voltage (V): 120  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 25 FT



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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 | 30 | 10 |
| RCR |     |     |     |     |  |     |     |     |     |  |     |     |     |  |     |     |     |  |    |    |    |
| 0   | 117 | 117 | 117 | 117 |  | 113 | 113 | 113 | 113 |  | 106 | 106 | 106 |  | 100 | 100 | 100 |  | 94 | 94 | 94 |
| 1   | 105 | 100 | 95  | 90  |  | 101 | 96  | 92  | 88  |  | 91  | 87  | 84  |  | 85  | 82  | 80  |  | 80 | 78 | 76 |
| 2   | 95  | 86  | 79  | 72  |  | 91  | 83  | 77  | 71  |  | 78  | 73  | 68  |  | 74  | 69  | 65  |  | 69 | 66 | 62 |
| 3   | 86  | 75  | 66  | 60  |  | 83  | 73  | 65  | 58  |  | 69  | 62  | 56  |  | 65  | 59  | 54  |  | 61 | 56 | 52 |
| 4   | 79  | 66  | 57  | 50  |  | 76  | 64  | 56  | 49  |  | 61  | 53  | 48  |  | 57  | 51  | 46  |  | 54 | 49 | 45 |
| 5   | 72  | 59  | 50  | 43  |  | 70  | 57  | 49  | 42  |  | 54  | 47  | 41  |  | 51  | 45  | 40  |  | 49 | 43 | 39 |
| 6   | 67  | 53  | 44  | 37  |  | 64  | 52  | 43  | 37  |  | 49  | 41  | 36  |  | 46  | 40  | 35  |  | 44 | 38 | 34 |
| 7   | 62  | 48  | 39  | 33  |  | 60  | 47  | 38  | 32  |  | 44  | 37  | 32  |  | 42  | 36  | 31  |  | 40 | 34 | 30 |
| 8   | 57  | 44  | 35  | 29  |  | 55  | 43  | 34  | 29  |  | 41  | 33  | 28  |  | 39  | 32  | 27  |  | 37 | 31 | 27 |
| 9   | 54  | 40  | 32  | 26  |  | 52  | 39  | 31  | 26  |  | 37  | 30  | 25  |  | 36  | 29  | 25  |  | 34 | 28 | 24 |
| 10  | 50  | 37  | 29  | 24  |  | 49  | 36  | 29  | 23  |  | 35  | 28  | 23  |  | 33  | 27  | 22  |  | 32 | 26 | 22 |

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

|     | 0°    | 45°   | 90°   |
|-----|-------|-------|-------|
| 0°  | 14581 | 14581 | 14581 |
| 5°  | 14623 | 14205 | 14199 |
| 10° | 14487 | 13846 | 13768 |
| 15° | 14289 | 13452 | 13295 |
| 20° | 14015 | 12983 | 12817 |
| 25° | 13702 | 12548 | 12263 |
| 30° | 13352 | 12061 | 11796 |
| 35° | 13000 | 11566 | 11332 |
| 40° | 12613 | 11163 | 10889 |
| 45° | 12186 | 10765 | 10517 |
| 50° | 11831 | 10357 | 10132 |
| 55° | 11394 | 9943  | 9753  |
| 60° | 10936 | 9483  | 9384  |
| 65° | 10454 | 8994  | 8934  |
| 70° | 9905  | 8468  | 8494  |
| 75° | 9083  | 7895  | 7976  |
| 80° | 8038  | 7330  | 7520  |
| 85° | 7145  | 6871  | 7172  |

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 114.2  | 2.8       |
| 10°-20°   | 325.6  | 8.0       |
| 20°-30°   | 487.6  | 11.9      |
| 30°-40°   | 583.5  | 14.3      |
| 40°-50°   | 611.8  | 15.0      |
| 50°-60°   | 575.2  | 14.1      |
| 60°-70°   | 481.4  | 11.8      |
| 70°-80°   | 345.4  | 8.5       |
| 80°-90°   | 206.9  | 5.1       |
| 90°-100°  | 131.2  | 3.2       |
| 100°-110° | 96.7   | 2.4       |
| 110°-120° | 64.7   | 1.6       |
| 120°-130° | 37.3   | 0.9       |
| 130°-140° | 17.2   | 0.4       |
| 140°-150° | 3.9    | 0.1       |
| 150°-160° | 0.0    | 0.0       |
| 160°-170° | 0.0    | 0.0       |
| 170°-180° | 0.0    | 0.0       |
| 0°-30°    | 927.4  | 22.7      |
| 0°-40°    | 1510.9 | 37.0      |
| 0°-60°    | 2697.9 | 66.1      |
| 0°-90°    | 3731.6 | 91.4      |
| 90°-120°  | 292.6  | 7.2       |
| 90°-150°  | 351.0  | 8.6       |
| 90°-180°  | 351.0  | 8.6       |
| 0°-180°   | 4082.7 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 1203 | 1203  | 1203 | 1203  | 1203 |      |
| 5°   | 1204 | 1203  | 1195 | 1205  | 1204 | 114  |
| 15°  | 1145 | 1153  | 1150 | 1165  | 1163 | 323  |
| 25°  | 1035 | 1049  | 1057 | 1074  | 1072 | 477  |
| 35°  | 892  | 913   | 931  | 954   | 961  | 557  |
| 45°  | 726  | 763   | 799  | 827   | 837  | 562  |
| 55°  | 556  | 602   | 654  | 689   | 701  | 498  |
| 65°  | 381  | 438   | 497  | 541   | 554  | 379  |
| 75°  | 210  | 273   | 340  | 386   | 401  | 222  |
| 85°  | 64   | 130   | 203  | 250   | 266  | 66   |
| 90°  | 18   | 83    | 153  | 199   | 213  | 12   |
| 95°  | 14   | 68    | 133  | 176   | 189  | 11   |
| 105° | 10   | 44    | 102  | 139   | 150  | 11   |
| 115° | 6    | 23    | 72   | 104   | 115  | 7    |
| 125° | 5    | 5     | 44   | 72    | 82   | 4    |
| 135° | 2    | 1     | 19   | 41    | 49   | 2    |
| 145° | 1    | 0     | 0    | 12    | 18   | 1    |
| 155° | 0    | 0     | 0    | 0     | 0    | 0    |
| 165° | 0    | 0     | 0    | 0     | 0    | 0    |
| 175° | 0    | 0     | 0    | 0     | 0    | 0    |
| 180° | 0    | 0     | 0    | 0     | 0    | 0    |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 1202.9 | 1202.9 | 1202.9 | 1202.9 | 1202.9 |
| 2.5°   | 1209.1 | 1205.4 | 1195.3 | 1206.6 | 1204.1 |
| 5°     | 1204.1 | 1202.9 | 1195.3 | 1205.4 | 1204.1 |
| 7.5°   | 1195.3 | 1195.3 | 1189.1 | 1200.4 | 1200.4 |
| 10°    | 1181.5 | 1185.3 | 1179.0 | 1191.6 | 1190.3 |
| 12.5°  | 1166.5 | 1171.5 | 1166.5 | 1180.3 | 1176.5 |
| 15°    | 1145.2 | 1152.7 | 1150.2 | 1165.2 | 1162.7 |
| 17.5°  | 1121.3 | 1130.1 | 1128.9 | 1143.9 | 1142.7 |
| 20°    | 1095.0 | 1106.3 | 1106.3 | 1121.3 | 1125.1 |
| 22.5°  | 1067.4 | 1079.9 | 1083.7 | 1098.8 | 1101.3 |
| 25°    | 1034.8 | 1048.6 | 1057.4 | 1073.7 | 1072.4 |
| 27.5°  | 1000.9 | 1017.2 | 1027.3 | 1044.8 | 1044.8 |
| 30°    | 965.8  | 984.6  | 997.2  | 1016.0 | 1019.7 |
| 32.5°  | 928.2  | 950.8  | 965.8  | 985.9  | 990.9  |
| 35°    | 891.8  | 913.1  | 930.7  | 954.5  | 960.8  |
| 37.5°  | 850.4  | 876.8  | 900.6  | 925.7  | 929.4  |
| 40°    | 811.5  | 840.4  | 866.7  | 893.1  | 898.1  |
| 42.5°  | 771.4  | 801.5  | 832.9  | 859.2  | 870.5  |
| 45°    | 726.2  | 762.6  | 799.0  | 826.6  | 836.6  |
| 47.5°  | 686.1  | 722.5  | 761.4  | 794.0  | 805.3  |
| 50°    | 643.5  | 681.1  | 727.5  | 758.8  | 770.1  |
| 52.5°  | 599.6  | 640.9  | 689.9  | 723.7  | 735.0  |
| 55°    | 555.7  | 602.1  | 653.5  | 688.6  | 701.2  |
| 57.5°  | 514.3  | 560.7  | 614.6  | 653.5  | 667.3  |
| 60°    | 467.9  | 519.3  | 575.7  | 615.9  | 630.9  |
| 62.5°  | 426.5  | 479.1  | 538.1  | 578.2  | 593.3  |
| 65°    | 381.3  | 437.7  | 496.7  | 540.6  | 554.4  |
| 67.5°  | 339.9  | 395.1  | 459.1  | 503.0  | 518.0  |
| 70°    | 296.0  | 353.7  | 417.7  | 462.8  | 479.1  |
| 72.5°  | 252.1  | 313.6  | 378.8  | 425.2  | 439.0  |
| 75°    | 209.5  | 273.4  | 339.9  | 386.3  | 401.4  |
| 77.5°  | 169.3  | 233.3  | 302.3  | 348.7  | 365.0  |
| 80°    | 129.2  | 195.7  | 267.2  | 313.6  | 329.9  |
| 82.5°  | 94.1   | 161.8  | 234.6  | 279.7  | 294.8  |
| 85°    | 64.0   | 130.4  | 203.2  | 249.6  | 265.9  |
| 87.5°  | 37.6   | 105.4  | 175.6  | 222.0  | 235.8  |
| 90°    | 17.6   | 82.8   | 153.0  | 199.4  | 213.2  |
| 92.5°  | 16.3   | 74.0   | 141.7  | 185.6  | 199.4  |
| 95°    | 13.8   | 67.7   | 133.0  | 175.6  | 189.4  |
| 97.5°  | 13.8   | 61.5   | 125.4  | 166.8  | 179.4  |
| 100°   | 12.5   | 55.2   | 117.9  | 156.8  | 169.3  |
| 102.5° | 11.3   | 48.9   | 109.1  | 148.0  | 160.5  |
| 105°   | 10.0   | 43.9   | 101.6  | 139.2  | 150.5  |
| 107.5° | 8.8    | 37.6   | 94.1   | 130.4  | 141.7  |
| 110°   | 8.8    | 32.6   | 86.5   | 121.7  | 133.0  |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°  | 22.5° | 45°  | 67.5° | 90°   |
|--------|-----|-------|------|-------|-------|
| 112.5° | 7.5 | 27.6  | 79.0 | 112.9 | 124.2 |
| 115°   | 6.3 | 22.6  | 71.5 | 104.1 | 115.4 |
| 117.5° | 6.3 | 17.6  | 64.0 | 96.6  | 106.6 |
| 120°   | 6.3 | 13.8  | 57.7 | 87.8  | 97.8  |
| 122.5° | 5.0 | 8.8   | 51.4 | 80.3  | 90.3  |
| 125°   | 5.0 | 5.0   | 43.9 | 71.5  | 81.5  |
| 127.5° | 3.8 | 2.5   | 37.6 | 64.0  | 72.7  |
| 130°   | 3.8 | 2.5   | 31.4 | 56.4  | 65.2  |
| 132.5° | 2.5 | 2.5   | 25.1 | 48.9  | 57.7  |
| 135°   | 2.5 | 1.3   | 18.8 | 41.4  | 48.9  |
| 137.5° | 2.5 | 1.3   | 12.5 | 33.9  | 41.4  |
| 140°   | 1.3 | 1.3   | 6.3  | 26.3  | 33.9  |
| 142.5° | 1.3 | 0.0   | 1.3  | 20.1  | 26.3  |
| 145°   | 1.3 | 0.0   | 0.0  | 12.5  | 17.6  |
| 147.5° | 1.3 | 0.0   | 0.0  | 6.3   | 11.3  |
| 150°   | 1.3 | 0.0   | 0.0  | 0.0   | 3.8   |
| 152.5° | 0.0 | 0.0   | 0.0  | 0.0   | 0.0   |
| 155°   | 0.0 | 0.0   | 0.0  | 0.0   | 0.0   |
| 157.5° | 0.0 | 0.0   | 0.0  | 0.0   | 0.0   |
| 160°   | 0.0 | 0.0   | 0.0  | 0.0   | 0.0   |
| 162.5° | 0.0 | 0.0   | 0.0  | 0.0   | 0.0   |
| 165°   | 0.0 | 0.0   | 0.0  | 0.0   | 0.0   |
| 167.5° | 0.0 | 0.0   | 0.0  | 0.0   | 0.0   |
| 170°   | 0.0 | 0.0   | 0.0  | 0.0   | 0.0   |
| 172.5° | 0.0 | 0.0   | 0.0  | 0.0   | 0.0   |
| 175°   | 0.0 | 0.0   | 0.0  | 0.0   | 0.0   |
| 177.5° | 0.0 | 0.0   | 0.0  | 0.0   | 0.0   |
| 180°   | 0.0 | 0.0   | 0.0  | 0.0   | 0.0   |

(END OF REPORT)