

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: P919652

Luminaire Tested: DFN2DIP-PN4F0-070D120US935-FLLFLL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P919652  
REPORT IS A COMBINATION OF REPORTS P899759 AND P896497  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-PN4F0-070D120US935-FLLFLL  
Description: 4 foot, Pentagon Define Geo, with Direct Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

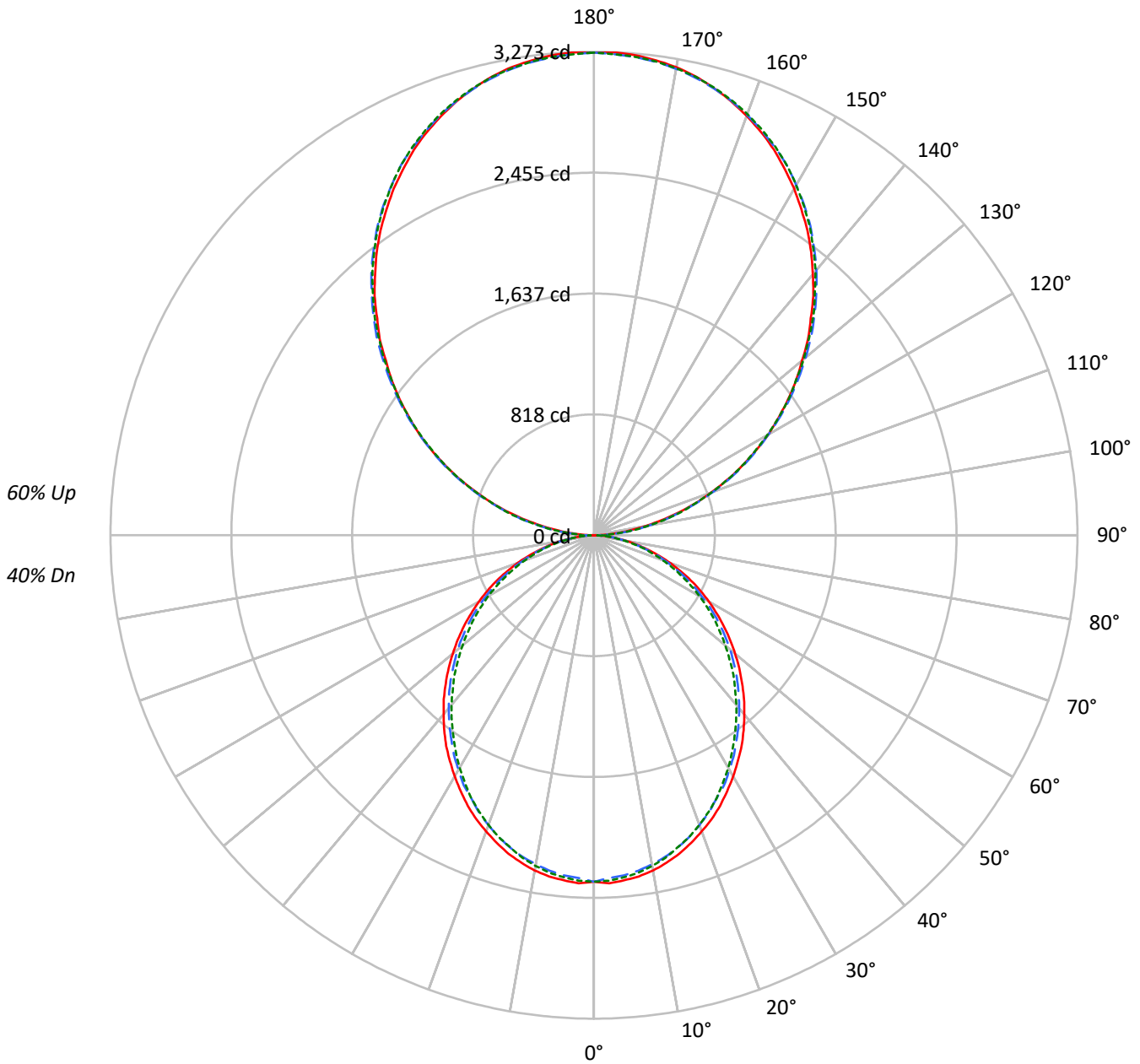
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 15110.5 lumens  
Efficiency: N/A  
Efficacy: 88.8 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
Luminous Opening: Rectangular w/ Sides (W: 3.74' x L: 3.94' x H: 0.1')  
CIE Type: Semi-Indirect

Input Watts (W): 170.2  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9789  
Total Harmonic Distortion (THDi): 0.074  
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



— 0°-180°    - - 45°-225°    - - - 90°-270°



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**COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:**

RF	20				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	50	30	10	0
RCR																					
0	105	105	105	105	95	95	95	95	78	78	78	61	61	61	47	47	47	47	47	47	40
1	95	91	87	84	87	83	80	77	68	66	64	54	52	51	41	40	39	39	39	39	33
2	87	80	74	68	79	73	67	63	59	56	53	47	45	43	36	35	33	33	33	33	28
3	79	70	63	57	72	64	58	53	52	48	44	42	39	36	32	30	28	28	28	28	24
4	72	62	54	48	66	57	50	45	47	42	38	37	34	31	29	26	24	24	24	24	20
5	66	55	47	41	60	50	43	38	42	36	32	33	30	27	26	23	21	21	21	21	18
6	61	49	41	36	55	45	38	33	37	32	28	30	26	23	23	21	19	19	19	19	15
7	56	44	37	31	51	41	34	29	34	29	25	27	24	21	21	19	16	16	16	16	14
8	52	40	33	27	48	37	30	26	31	26	22	25	21	18	20	17	15	15	15	15	12
9	49	37	29	24	44	34	27	23	28	23	20	23	19	16	18	15	13	13	13	13	11
10	45	34	27	22	41	31	25	20	26	21	18	21	17	15	17	14	12	12	12	12	10

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

	0°	45°	90°
0°	1712	1712	1712
5°	1715	1688	1700
10°	1701	1666	1677
15°	1676	1639	1641
20°	1642	1601	1605
25°	1608	1555	1563
30°	1566	1513	1509
35°	1526	1463	1452
40°	1477	1413	1398
45°	1428	1363	1342
50°	1375	1310	1278
55°	1318	1249	1219
60°	1255	1176	1152
65°	1186	1101	1072
70°	1098	1009	987
75°	976	900	908
80°	829	760	757
85°	600	519	507

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 90°  
 Vertical Angle: 90°  
 Luminance: 2559 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	220.7	1.5
10°-20°	621.0	4.1
20°-30°	912.7	6.0
30°-40°	1060.0	7.0
40°-50°	1058.7	7.0
50°-60°	923.2	6.1
60°-70°	682.4	4.5
70°-80°	386.1	2.6
80°-90°	111.2	0.7
90°-100°	202.2	1.3
100°-110°	642.4	4.3
110°-120°	1099.4	7.3
120°-130°	1445.9	9.6
130°-140°	1623.0	10.7
140°-150°	1591.6	10.5
150°-160°	1335.1	8.8
160°-170°	885.4	5.9
170°-180°	309.5	2.0
0°-30°	1754.4	11.6
0°-40°	2814.4	18.6
0°-60°	4796.3	31.7
0°-90°	5976.0	39.5
90°-120°	1944.1	12.9
90°-150°	6604.6	43.7
90°-180°	9134.0	60.4
0°-180°	15110.5	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	2345	2345	2345	2345	2345	
5°	2345	2336	2311	2329	2325	223
15°	2232	2219	2190	2199	2188	629
25°	2020	2002	1964	1969	1964	930
35°	1743	1721	1684	1671	1660	1089
45°	1418	1403	1369	1344	1335	1095
55°	1074	1060	1033	1006	994	960
65°	724	710	688	668	656	716
75°	379	374	363	350	354	404
85°	92	90	88	81	79	103
90°	3	36	96	91	94	15
95°	144	171	176	176	171	160
105°	593	601	607	612	612	626
115°	1103	1119	1114	1111	1103	1091
125°	1605	1629	1622	1613	1610	1434
135°	2076	2106	2112	2109	2101	1604
145°	2520	2540	2555	2558	2548	1574
155°	2881	2889	2898	2912	2903	1326
165°	3135	3132	3132	3151	3138	884
175°	3262	3254	3248	3268	3251	310
180°	3268	3268	3268	3268	3268	



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**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°
0°	2345.1	2345.1	2345.1	2345.1	2345.1
2.5°	2358.8	2347.5	2322.6	2345.1	2340.8
5°	2345.1	2336.3	2311.4	2329.3	2325.0
7.5°	2329.3	2315.9	2291.0	2309.3	2304.7
10°	2304.7	2288.9	2261.8	2279.8	2273.1
12.5°	2270.7	2257.4	2230.3	2241.5	2237.0
15°	2232.5	2219.0	2189.6	2198.7	2187.5
17.5°	2185.0	2171.7	2142.2	2153.5	2142.2
20°	2133.1	2119.8	2088.2	2094.9	2086.0
22.5°	2081.5	2061.1	2031.7	2031.7	2027.1
25°	2020.5	2002.5	1964.3	1968.6	1964.3
27.5°	1952.7	1937.0	1907.8	1901.1	1889.8
30°	1885.3	1867.1	1833.4	1826.7	1817.6
32.5°	1813.0	1799.7	1763.5	1749.9	1740.8
35°	1743.2	1720.7	1684.5	1670.9	1659.7
37.5°	1664.2	1643.9	1607.7	1592.0	1580.7
40°	1583.1	1564.9	1528.8	1508.7	1499.6
42.5°	1504.2	1486.0	1450.1	1427.4	1413.9
45°	1418.5	1402.7	1368.7	1344.1	1335.0
47.5°	1335.0	1319.2	1283.1	1258.2	1244.8
50°	1247.0	1235.7	1204.1	1172.6	1161.3
52.5°	1161.3	1145.6	1116.4	1091.5	1075.6
55°	1073.5	1059.9	1032.9	1005.8	994.5
57.5°	985.5	974.2	944.8	917.7	908.7
60°	897.4	888.5	857.0	832.2	825.4
62.5°	811.7	796.0	773.5	751.0	741.9
65°	724.0	710.3	687.9	667.5	656.3
67.5°	633.8	622.3	602.2	586.4	577.3
70°	550.3	541.2	520.8	505.1	496.2
72.5°	464.6	455.6	444.3	428.5	421.8
75°	378.8	374.4	362.9	349.6	354.1
77.5°	302.2	293.1	288.5	281.8	275.2
80°	225.6	223.3	218.7	212.0	207.4
82.5°	153.3	153.3	151.2	142.2	142.2
85°	92.4	90.2	88.1	81.1	79.0
87.5°	40.6	36.2	31.6	24.9	22.5
90°	2.9	35.5	96.5	90.7	93.6
92.5°	61.0	82.7	85.7	88.7	88.7
95°	143.8	171.4	176.3	176.3	171.4
97.5°	239.4	265.0	275.9	275.9	275.9
100°	349.7	372.4	380.2	380.2	377.3
102.5°	466.0	482.7	493.5	496.5	493.5
105°	593.1	600.9	606.8	611.7	611.7
107.5°	719.1	731.0	731.0	732.9	719.1
110°	841.3	857.0	857.0	857.0	849.2



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**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°
112.5°	973.3	990.1	987.0	979.2	973.3
115°	1103.3	1119.1	1114.1	1111.2	1103.3
117.5°	1232.3	1254.0	1240.3	1232.3	1224.5
120°	1362.4	1384.1	1362.4	1362.4	1353.6
122.5°	1480.7	1508.2	1494.4	1486.5	1480.7
125°	1604.7	1629.4	1621.5	1612.6	1609.6
127.5°	1726.0	1756.4	1745.6	1733.8	1726.0
130°	1839.2	1874.7	1869.7	1863.8	1853.0
132.5°	1966.3	1993.9	1995.8	1982.0	1974.2
135°	2075.6	2106.2	2112.1	2109.1	2101.3
137.5°	2197.8	2222.4	2227.3	2225.3	2213.5
140°	2305.1	2329.8	2343.6	2343.6	2332.7
142.5°	2415.5	2440.2	2448.0	2450.9	2440.2
145°	2519.9	2539.6	2555.4	2558.4	2547.5
147.5°	2613.5	2638.1	2650.0	2654.9	2644.0
150°	2710.1	2726.8	2737.6	2746.5	2737.6
152.5°	2795.7	2812.4	2826.3	2837.2	2826.3
155°	2881.4	2889.3	2898.2	2912.0	2903.1
157.5°	2955.4	2961.2	2966.1	2985.9	2972.1
160°	3021.3	3027.3	3030.2	3047.0	3035.1
162.5°	3082.4	3082.4	3085.4	3104.1	3090.3
165°	3134.6	3131.7	3131.7	3151.3	3137.6
167.5°	3181.9	3173.0	3173.0	3192.8	3179.0
170°	3217.4	3209.5	3206.5	3226.2	3209.5
172.5°	3242.0	3234.1	3231.2	3250.9	3234.1
175°	3261.7	3253.8	3247.9	3267.6	3250.9
177.5°	3272.6	3264.6	3258.7	3275.5	3258.7
180°	3267.6	3267.6	3267.6	3267.6	3267.6



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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	8.09	8.87	9.14	9.92	11.33	7.65	8.43	8.70	9.48	10.89
	3H	9.75	10.44	10.80	11.50	12.93	9.27	9.96	10.32	11.02	12.45
	4H	10.34	10.99	11.40	12.05	13.49	9.85	10.51	10.91	11.57	13.00
	6H	10.73	11.34	11.81	12.40	13.85	10.24	10.85	11.31	11.91	13.36
	8H	10.84	11.41	11.91	12.49	13.94	10.34	10.92	11.42	12.00	13.45
	12H	10.88	11.43	11.97	12.50	13.97	10.38	10.93	11.47	12.00	13.47
4H	2H	8.54	9.20	9.61	10.26	11.70	8.19	8.85	9.26	9.91	11.35
	3H	10.41	10.96	11.48	12.04	13.49	10.00	10.55	11.08	11.64	13.09
	4H	11.12	11.62	12.20	12.70	14.17	10.70	11.21	11.78	12.28	13.76
	6H	11.63	12.06	12.72	13.16	14.63	11.21	11.64	12.30	12.74	14.21
	8H	11.78	12.19	12.87	13.28	14.76	11.35	11.76	12.44	12.85	14.33
	12H	11.85	12.22	12.96	13.32	14.81	11.41	11.78	12.52	12.88	14.37
8H	4H	11.31	11.71	12.40	12.80	14.29	10.94	11.34	12.03	12.43	13.92
	6H	11.94	12.27	13.05	13.41	14.89	11.56	11.90	12.68	13.03	14.51
	8H	12.16	12.45	13.28	13.57	15.07	11.78	12.07	12.90	13.19	14.69
	12H	12.29	12.55	13.42	13.66	15.20	11.89	12.15	13.01	13.26	14.80
12H	4H	11.29	11.66	12.40	12.76	14.25	10.93	11.29	12.04	12.40	13.89
	6H	11.97	12.26	13.09	13.38	14.88	11.60	11.90	12.72	13.01	14.51
	8H	12.21	12.47	13.33	13.58	15.12	11.84	12.09	12.96	13.21	14.74