

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: P910529

Luminaire Tested: DFN2DIP-4P4F0-050D080US850-RLLONL

Issue Date: 11/21/2024

**Test Information**

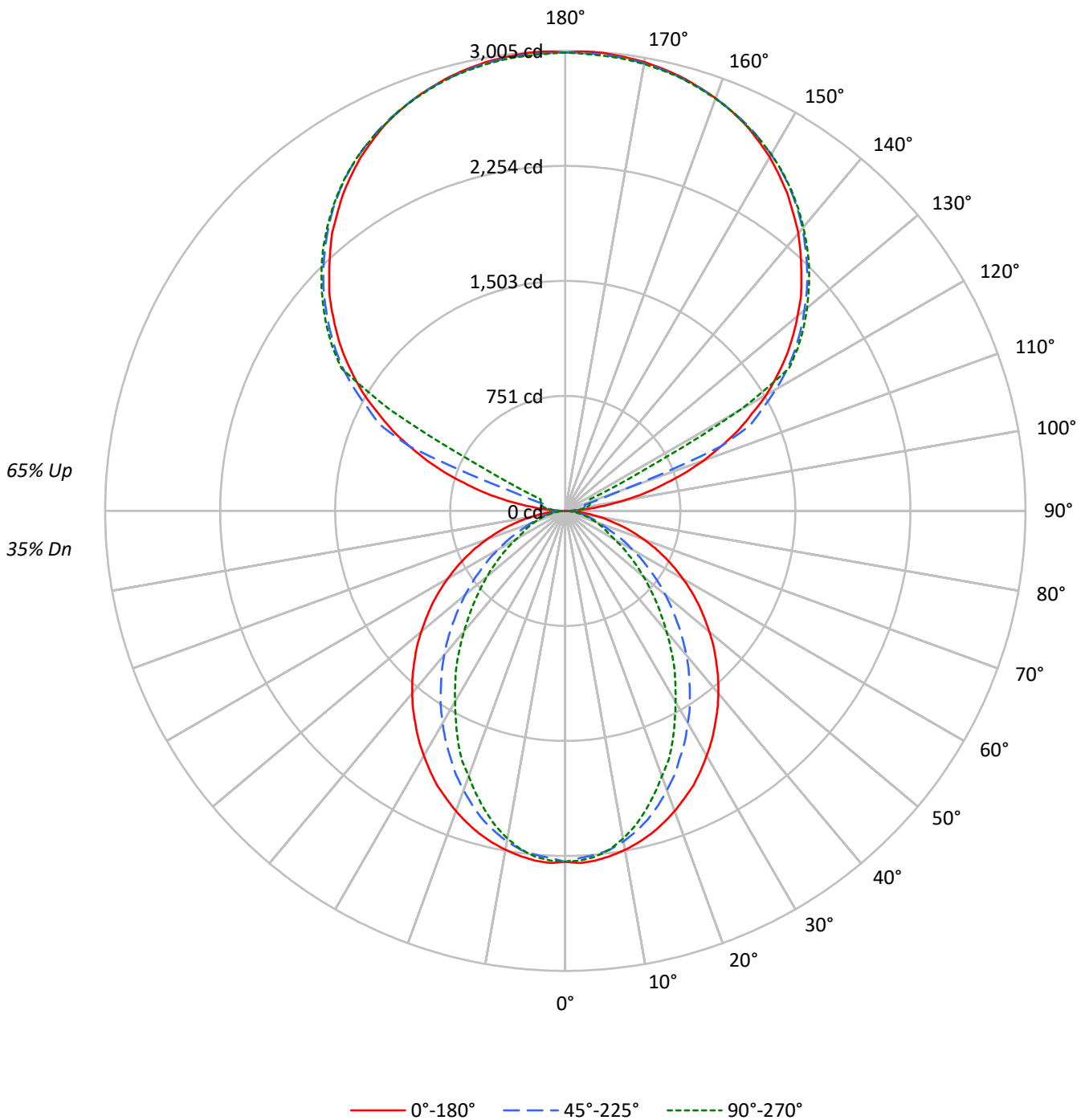
Test Method: LM-79-2019  
Report Number: P910529  
REPORT IS A COMBINATION OF REPORTS P900664 AND P897523  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-4P4F0-050D080US850-RLLONL  
Description: 4 foot, 90deg - 4way Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 13496.6 lumens  
Efficiency: N/A  
Efficacy: 109.2 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 4.07' x L: 4.07' x H: 0.1')  
CIE Type: Semi-Indirect  
  
Input Watts (W): 123.6  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9951  
Total Harmonic Distortion (THDi): 0.07  
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				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	104	104	104	104	94	94	94	94	75	75	75	58	58	58	42	42	42	35				35
1	95	91	87	84	86	82	79	76	66	64	62	51	50	49	38	37	36	30				30
2	87	80	74	69	78	72	67	63	58	55	52	46	43	41	34	32	31	26				26
3	79	70	63	58	71	64	58	53	52	47	44	41	38	35	30	28	27	22				22
4	72	62	55	49	65	57	50	45	46	41	38	36	33	30	27	25	23	19				19
5	67	56	48	42	60	51	44	39	41	36	33	33	29	27	25	22	21	17				17
6	61	50	42	37	55	45	39	34	37	32	29	30	26	23	22	20	18	15				15
7	57	45	37	32	51	41	34	30	34	29	25	27	23	21	21	18	16	14				14
8	53	41	33	28	48	37	31	26	31	26	22	25	21	19	19	17	15	12				12
9	49	37	30	25	44	34	28	23	28	23	20	23	19	17	18	15	13	11				11
10	46	34	27	23	41	31	25	21	26	21	18	21	18	15	16	14	12	10				10

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

	0°	45°	90°
0°	1487	1487	1487
5°	1489	1464	1473
10°	1475	1435	1426
15°	1454	1388	1352
20°	1428	1323	1262
25°	1400	1251	1174
30°	1363	1176	1063
35°	1327	1095	966
40°	1291	1012	854
45°	1248	919	752
50°	1204	826	653
55°	1158	726	558
60°	1105	622	459
65°	1043	516	414
70°	969	416	376
75°	876	368	343
80°	741	311	299
85°	518	210	229

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 90°  
 Vertical Angle: 90°  
 Luminance: 1543 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	214.8	1.6
10°-20°	589.6	4.4
20°-30°	827.8	6.1
30°-40°	902.4	6.7
40°-50°	829.4	6.1
50°-60°	651.3	4.8
60°-70°	424.0	3.1
70°-80°	218.2	1.6
80°-90°	61.0	0.5
90°-100°	98.7	0.7
100°-110°	368.1	2.7
110°-120°	976.2	7.2
120°-130°	1619.0	12.0
130°-140°	1719.8	12.7
140°-150°	1598.3	11.8
150°-160°	1285.0	9.5
160°-170°	828.0	6.1
170°-180°	285.0	2.1
0°-30°	1632.2	12.1
0°-40°	2534.6	18.8
0°-60°	4015.3	29.8
0°-90°	4718.5	35.0
90°-120°	1442.9	10.7
90°-150°	6380.0	47.3
90°-180°	8778.0	65.0
0°-180°	13496.6	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	2292	2292	2292	2292	2292	
5°	2292	2281	2254	2273	2267	217
15°	2180	2157	2086	2047	2026	614
25°	1979	1912	1775	1690	1659	910
35°	1705	1599	1417	1286	1240	1067
45°	1394	1255	1037	890	840	1076
55°	1060	898	674	550	510	947
65°	716	548	361	290	284	709
75°	382	236	166	151	149	404
85°	89	46	39	39	39	102
90°	2	26	43	54	58	13
95°	141	69	84	96	93	167
105°	659	724	132	156	165	704
115°	1246	1283	1337	334	178	1226
125°	1761	1790	1831	1846	1852	1571
135°	2180	2214	2234	2256	2251	1684
145°	2528	2526	2563	2578	2567	1581
155°	2784	2765	2791	2804	2786	1283
165°	2934	2921	2927	2942	2927	829
175°	3001	2985	2990	3005	2983	286
180°	2994	2994	2994	2994	2994	



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**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°
0°	2291.7	2291.7	2291.7	2291.7	2291.7
2.5°	2302.1	2291.7	2268.9	2289.8	2285.5
5°	2291.7	2281.4	2254.4	2273.0	2266.9
7.5°	2273.0	2260.7	2231.6	2239.8	2229.4
10°	2248.2	2233.6	2192.3	2185.9	2173.5
12.5°	2217.1	2198.5	2142.4	2130.1	2107.1
15°	2179.7	2156.9	2086.5	2047.1	2026.4
17.5°	2136.2	2103.0	2015.8	1970.2	1937.0
20°	2086.5	2044.9	1941.2	1889.5	1843.7
22.5°	2032.6	1984.8	1864.5	1794.0	1763.0
25°	1978.6	1912.1	1775.3	1690.3	1659.1
27.5°	1914.4	1843.7	1692.3	1594.9	1547.2
30°	1845.9	1767.0	1601.1	1495.4	1439.3
32.5°	1779.5	1684.0	1514.1	1389.6	1337.7
35°	1704.9	1599.1	1416.6	1285.9	1240.2
37.5°	1632.2	1518.1	1325.4	1182.1	1130.4
40°	1555.5	1431.2	1229.8	1082.6	1028.7
42.5°	1476.7	1344.0	1134.5	980.9	929.2
45°	1393.8	1254.7	1037.0	889.6	839.8
47.5°	1314.9	1167.8	943.8	796.4	750.8
50°	1227.9	1080.6	852.5	709.2	665.8
52.5°	1142.7	987.1	765.3	628.5	589.1
55°	1059.8	898.0	673.9	549.6	510.3
57.5°	974.8	808.9	593.2	477.1	443.8
60°	887.6	721.7	508.0	402.5	369.2
62.5°	802.7	636.8	435.5	336.0	319.5
65°	715.5	547.5	360.9	290.4	284.1
67.5°	632.6	464.6	290.4	255.1	248.9
70°	545.5	383.7	240.5	219.8	211.5
72.5°	462.6	309.0	201.2	184.6	180.4
75°	381.6	236.3	165.9	151.4	149.4
77.5°	300.8	167.9	130.8	122.3	118.1
80°	226.0	120.3	99.5	91.3	91.3
82.5°	157.6	81.0	68.4	64.2	64.2
85°	89.2	45.6	39.4	39.4	39.4
87.5°	33.3	16.5	16.5	14.5	14.5
90°	2.1	26.0	43.3	54.2	58.4
92.5°	54.2	45.6	52.0	56.3	58.4
95°	140.7	69.2	84.4	95.5	93.2
97.5°	253.4	75.9	110.3	117.1	119.1
100°	383.6	86.7	123.5	140.7	145.1
102.5°	526.4	522.2	127.9	151.5	158.3
105°	658.6	723.7	132.2	155.9	164.7
107.5°	812.5	866.5	136.6	160.3	169.0
110°	960.0	1005.2	379.3	162.6	171.1



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**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°
112.5°	1098.6	1137.4	1100.7	166.7	173.4
115°	1245.7	1282.6	1336.8	333.7	177.8
117.5°	1373.6	1416.9	1453.9	1143.8	576.3
120°	1516.7	1549.1	1588.2	1614.1	1321.6
122.5°	1637.8	1672.6	1716.1	1728.9	1731.3
125°	1761.3	1789.6	1830.7	1845.9	1852.4
127.5°	1874.0	1904.4	1937.1	1958.6	1960.7
130°	1980.2	2014.9	2038.7	2062.6	2060.5
132.5°	2088.6	2116.9	2140.6	2160.1	2158.0
135°	2179.6	2214.3	2233.6	2255.6	2251.2
137.5°	2274.9	2300.8	2322.7	2344.3	2337.9
140°	2367.9	2385.5	2409.2	2428.7	2417.8
142.5°	2446.2	2461.3	2489.4	2506.7	2495.8
145°	2528.5	2526.2	2563.0	2578.2	2567.3
147.5°	2599.8	2593.4	2630.1	2641.0	2632.4
150°	2669.3	2654.1	2688.8	2701.6	2690.9
152.5°	2727.7	2710.4	2742.8	2756.0	2740.8
155°	2784.0	2764.7	2790.7	2803.6	2786.4
157.5°	2829.5	2812.3	2831.8	2847.0	2829.5
160°	2868.7	2855.6	2868.7	2881.5	2866.3
162.5°	2903.1	2890.3	2901.0	2916.2	2896.7
165°	2933.5	2920.7	2927.1	2942.2	2927.1
167.5°	2957.4	2944.3	2950.9	2966.1	2946.6
170°	2977.0	2963.8	2968.2	2983.4	2963.8
172.5°	2989.9	2977.0	2981.3	2996.5	2977.0
175°	3000.6	2985.4	2989.9	3004.9	2983.4
177.5°	3004.9	2989.9	2992.1	3007.3	2987.8
180°	2994.2	2994.2	2994.2	2994.2	2994.2



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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	6.95	7.67	8.03	8.75	10.22	2.91	3.63	4.00	4.71	6.19
	3H	8.63	9.27	9.72	10.36	11.85	4.10	4.74	5.19	5.83	7.32
	4H	9.23	9.85	10.34	10.93	12.43	4.54	5.15	5.64	6.24	7.74
	6H	9.66	10.22	10.77	11.31	12.82	4.86	5.42	5.97	6.51	8.02
	8H	9.78	10.32	10.90	11.42	12.92	4.95	5.48	6.06	6.59	8.09
	12H	9.84	10.35	10.96	11.45	12.97	4.99	5.49	6.10	6.59	8.12
4H	2H	6.96	7.57	8.07	8.66	10.15	3.50	4.11	4.61	5.20	6.69
	3H	8.78	9.29	9.90	10.41	11.92	4.84	5.35	5.96	6.46	7.97
	4H	9.47	9.94	10.59	11.05	12.58	5.39	5.85	6.50	6.96	8.49
	6H	9.99	10.39	11.12	11.52	13.04	5.80	6.20	6.93	7.33	8.85
	8H	10.17	10.54	11.29	11.66	13.20	5.93	6.30	7.05	7.42	8.96
	12H	10.26	10.60	11.40	11.73	13.27	5.99	6.33	7.13	7.46	9.00
8H	4H	9.44	9.81	10.56	10.93	12.47	5.66	6.03	6.79	7.15	8.69
	6H	10.00	10.31	11.15	11.47	13.01	6.18	6.49	7.32	7.65	9.18
	8H	10.22	10.49	11.38	11.63	13.19	6.37	6.64	7.52	7.78	9.34
	12H	10.36	10.60	11.52	11.74	13.33	6.49	6.72	7.64	7.86	9.45
12H	4H	9.38	9.72	10.52	10.85	12.39	5.66	6.00	6.80	7.13	8.67
	6H	9.98	10.25	11.13	11.39	12.94	6.23	6.50	7.38	7.64	9.19
	8H	10.20	10.43	11.35	11.57	13.16	6.44	6.67	7.59	7.81	9.40