

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: P922487

Luminaire Tested: DFN2DIP-PN4F0-100D110US940-RLLONL

Issue Date: 11/21/2024

**Test Information**

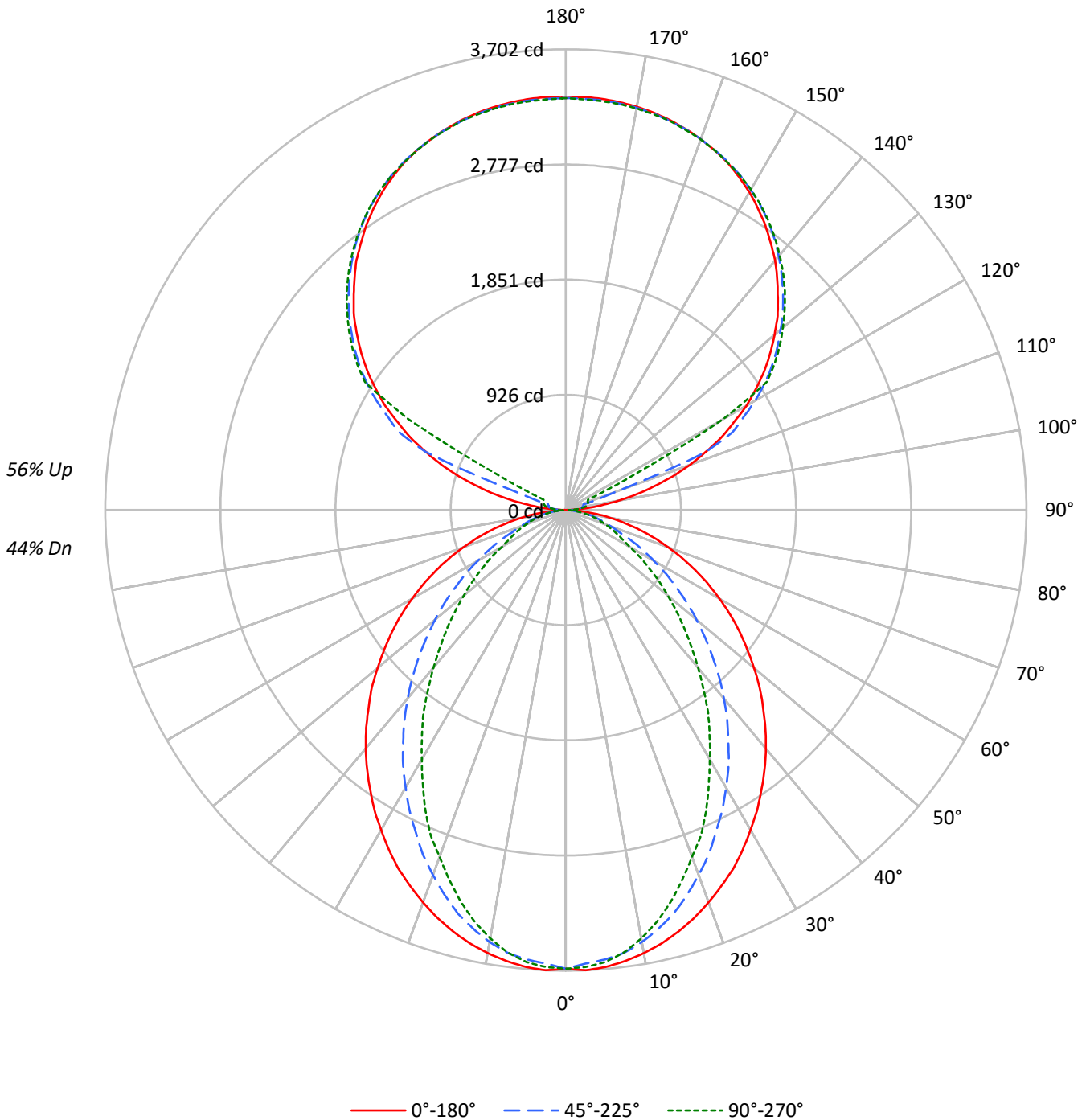
Test Method: LM-79-2019  
Report Number: P922487  
REPORT IS A COMBINATION OF REPORTS P901268 AND P898053  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-PN4F0-100D110US940-RLONL  
Description: 4 foot, Pentagon Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 17290.2 lumens  
Efficiency: N/A  
Efficacy: 89.8 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 3.74' x L: 3.94' x H: 0.1')  
CIE Type: General Diffuse  
  
Input Watts (W): 192.6  
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			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	106	106	106	106	97	97	97	97	80	80	80	65	65	65	50	50	50	50	50	50	44
1	97	93	89	86	89	85	82	79	71	68	66	57	56	55	45	44	43	43	43	43	38
2	89	81	76	71	81	75	70	66	62	59	56	51	48	46	40	39	37	37	37	37	32
3	81	72	65	59	74	66	60	55	55	51	47	45	42	40	36	34	32	32	32	32	28
4	74	64	56	51	68	59	52	47	49	45	41	41	37	34	33	30	28	28	28	28	24
5	68	57	49	44	62	53	46	41	44	39	35	37	33	30	30	27	25	25	25	25	21
6	63	51	44	38	58	47	41	36	40	35	31	33	29	26	27	24	22	22	22	22	19
7	58	46	39	33	53	43	36	31	37	31	27	30	26	24	25	22	20	20	20	20	17
8	54	42	35	30	50	39	33	28	33	28	24	28	24	21	23	20	18	18	18	18	15
9	50	39	31	26	46	36	29	25	31	26	22	26	22	19	21	18	16	16	16	16	14
10	47	35	28	24	43	33	27	22	28	23	20	24	20	17	20	17	15	15	15	15	13

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

	0°	45°	90°
0°	2690	2690	2690
5°	2694	2648	2665
10°	2668	2596	2579
15°	2631	2511	2445
20°	2582	2393	2281
25°	2533	2261	2123
30°	2466	2125	1921
35°	2400	1979	1745
40°	2334	1828	1542
45°	2256	1661	1358
50°	2176	1491	1179
55°	2093	1310	1006
60°	1996	1121	829
65°	1885	929	746
70°	1750	749	676
75°	1581	662	616
80°	1335	556	536
85°	930	373	406

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 2256 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	345.4	2.0
10°-20°	948.2	5.5
20°-30°	1331.2	7.7
30°-40°	1451.1	8.4
40°-50°	1333.8	7.7
50°-60°	1047.4	6.1
60°-70°	681.8	3.9
70°-80°	351.0	2.0
80°-90°	95.4	0.6
90°-100°	109.2	0.6
100°-110°	406.9	2.4
110°-120°	1079.2	6.2
120°-130°	1789.9	10.4
130°-140°	1901.3	11.0
140°-150°	1767.1	10.2
150°-160°	1420.7	8.2
160°-170°	915.4	5.3
170°-180°	315.1	1.8
0°-30°	2624.8	15.2
0°-40°	4076.0	23.6
0°-60°	6457.2	37.3
0°-90°	7585.3	43.9
90°-120°	1595.3	9.2
90°-150°	7053.7	40.8
90°-180°	9705.0	56.1
0°-180°	17290.2	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	3685	3685	3685	3685	3685	
5°	3685	3669	3625	3655	3645	349
15°	3505	3468	3355	3292	3259	988
25°	3182	3075	2855	2718	2668	1463
35°	2742	2572	2278	2068	1994	1716
45°	2241	2018	1668	1431	1351	1731
55°	1704	1444	1084	884	821	1523
65°	1151	880	580	467	457	1141
75°	614	380	267	243	240	649
85°	143	73	63	63	63	164
90°	2	29	48	60	65	16
95°	156	76	93	106	103	184
105°	728	800	146	172	182	778
115°	1377	1418	1478	369	196	1356
125°	1947	1979	2024	2041	2048	1737
135°	2410	2448	2470	2494	2489	1862
145°	2796	2793	2834	2850	2838	1748
155°	3078	3057	3085	3100	3080	1418
165°	3243	3229	3236	3253	3236	916
175°	3317	3301	3306	3322	3298	316
180°	3310	3310	3310	3310	3310	



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**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°
0°	3685.4	3685.4	3685.4	3685.4	3685.4
2.5°	3702.0	3685.4	3648.6	3682.2	3675.5
5°	3685.4	3668.8	3625.2	3655.4	3645.4
7.5°	3655.4	3635.5	3588.8	3601.9	3585.3
10°	3615.4	3592.0	3525.5	3515.2	3495.4
12.5°	3565.5	3535.4	3445.1	3425.3	3388.5
15°	3505.3	3468.5	3355.2	3291.9	3258.7
17.5°	3435.2	3381.8	3241.7	3168.4	3115.0
20°	3355.2	3288.4	3121.7	3038.6	2964.9
22.5°	3268.6	3191.8	2998.2	2885.0	2835.1
25°	3181.9	3075.1	2854.9	2718.3	2668.1
27.5°	3078.5	2964.9	2721.5	2564.7	2488.0
30°	2968.5	2841.4	2574.6	2404.9	2314.6
32.5°	2861.7	2708.0	2434.9	2234.6	2151.1
35°	2741.7	2571.5	2278.1	2068.0	1994.3
37.5°	2624.9	2441.2	2131.3	1900.9	1817.8
40°	2501.4	2301.5	1977.7	1741.0	1654.3
42.5°	2374.7	2161.3	1824.5	1577.5	1494.3
45°	2241.3	2017.7	1667.8	1430.7	1350.7
47.5°	2114.7	1877.9	1517.7	1280.6	1207.4
50°	1974.5	1737.8	1370.8	1140.5	1070.8
52.5°	1837.5	1587.4	1230.7	1010.6	947.3
55°	1704.1	1444.1	1083.9	884.0	820.6
57.5°	1567.6	1300.7	954.0	767.1	713.7
60°	1427.4	1160.7	817.1	647.2	593.8
62.5°	1290.8	1024.0	700.3	540.4	513.8
65°	1150.8	880.4	580.3	467.1	456.8
67.5°	1017.4	747.0	467.1	410.1	400.2
70°	877.2	617.2	386.7	353.5	340.1
72.5°	743.8	496.8	323.4	296.9	290.2
75°	613.6	380.0	266.8	243.4	240.2
77.5°	483.8	270.0	210.2	196.7	190.0
80°	363.4	193.6	160.0	146.9	146.9
82.5°	253.3	130.2	110.0	103.3	103.3
85°	143.3	73.2	63.3	63.3	63.3
87.5°	53.4	26.6	26.6	23.4	23.4
90°	2.3	28.7	47.8	60.0	64.6
92.5°	60.0	50.4	57.4	62.3	64.6
95°	155.6	76.5	93.3	105.5	103.0
97.5°	280.2	83.9	122.0	129.4	131.7
100°	424.1	95.9	136.5	155.6	160.4
102.5°	581.9	577.4	141.3	167.6	175.0
105°	728.2	800.1	146.2	172.4	182.1
107.5°	898.3	958.0	151.1	177.2	186.9
110°	1061.2	1111.3	419.3	179.8	189.1



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**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°
112.5°	1214.6	1257.5	1216.8	184.3	191.7
115°	1377.2	1417.9	1478.0	368.9	196.5
117.5°	1518.7	1566.5	1607.4	1264.6	637.1
120°	1676.8	1712.6	1755.9	1784.6	1461.2
122.5°	1810.8	1849.1	1897.2	1911.5	1914.1
125°	1947.3	1978.6	2024.1	2040.9	2048.0
127.5°	2071.9	2105.4	2141.5	2165.4	2167.7
130°	2189.3	2227.8	2253.9	2280.4	2278.1
132.5°	2309.1	2340.4	2366.6	2388.2	2385.9
135°	2409.8	2448.2	2469.5	2493.8	2488.9
137.5°	2515.1	2543.8	2567.9	2591.8	2584.7
140°	2618.1	2637.3	2663.5	2685.1	2673.2
142.5°	2704.5	2721.2	2752.3	2771.3	2759.4
145°	2795.5	2792.9	2833.6	2850.4	2838.5
147.5°	2874.3	2867.2	2907.9	2919.8	2910.5
150°	2951.1	2934.4	2972.7	2987.0	2975.0
152.5°	3015.7	2996.6	3032.4	3047.0	3030.2
155°	3078.0	3056.6	3085.3	3099.6	3080.5
157.5°	3128.3	3109.2	3130.9	3147.6	3128.3
160°	3171.5	3157.0	3171.5	3185.7	3169.0
162.5°	3209.6	3195.4	3207.4	3224.2	3202.6
165°	3243.2	3229.0	3236.1	3252.9	3236.1
167.5°	3269.6	3255.2	3262.6	3279.4	3257.8
170°	3291.3	3276.8	3281.6	3298.4	3276.8
172.5°	3305.5	3291.3	3296.1	3312.9	3291.3
175°	3317.4	3300.7	3305.5	3322.3	3298.4
177.5°	3322.3	3305.5	3308.1	3324.8	3303.3
180°	3310.4	3310.4	3310.4	3310.4	3310.4



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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	9.99	10.77	11.01	11.79	13.15	5.96	6.74	6.97	7.76	9.12
	3H	11.67	12.37	12.69	13.40	14.78	7.14	7.84	8.17	8.87	10.25
	4H	12.28	12.94	13.31	13.97	15.36	7.59	8.25	8.63	9.28	10.67
	6H	12.70	13.31	13.75	14.34	15.74	7.91	8.52	8.96	9.55	10.95
	8H	12.83	13.40	13.88	14.46	15.85	8.00	8.58	9.05	9.63	11.02
	12H	12.89	13.44	13.94	14.48	15.90	8.04	8.59	9.10	9.64	11.06
4H	2H	10.00	10.67	11.05	11.70	13.08	6.55	7.21	7.59	8.24	9.63
	3H	11.83	12.38	12.88	13.44	14.84	7.89	8.44	8.95	9.50	10.90
	4H	12.52	13.03	13.58	14.08	15.50	8.44	8.95	9.50	10.00	11.42
	6H	13.04	13.47	14.11	14.55	15.96	8.86	9.29	9.93	10.36	11.78
	8H	13.22	13.62	14.28	14.69	16.12	8.99	9.39	10.05	10.46	11.89
	12H	13.31	13.68	14.40	14.76	16.19	9.05	9.42	10.14	10.50	11.93
8H	4H	12.49	12.89	13.56	13.96	15.39	8.72	9.12	9.79	10.19	11.62
	6H	13.06	13.39	14.15	14.50	15.93	9.24	9.57	10.33	10.68	12.11
	8H	13.28	13.57	14.37	14.66	16.11	9.43	9.72	10.53	10.81	12.26
	12H	13.41	13.67	14.51	14.76	16.25	9.55	9.80	10.65	10.89	12.38
12H	4H	12.44	12.80	13.52	13.88	15.32	8.72	9.09	9.81	10.17	11.60
	6H	13.03	13.32	14.13	14.42	15.86	9.29	9.58	10.38	10.67	12.12
	8H	13.25	13.51	14.35	14.60	16.08	9.50	9.75	10.60	10.84	12.33