

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: P927182

Luminaire Tested: DFN2DIP-HX4F0-120D090US830-RLLONL

Issue Date: 12/12/2024

**Test Information**

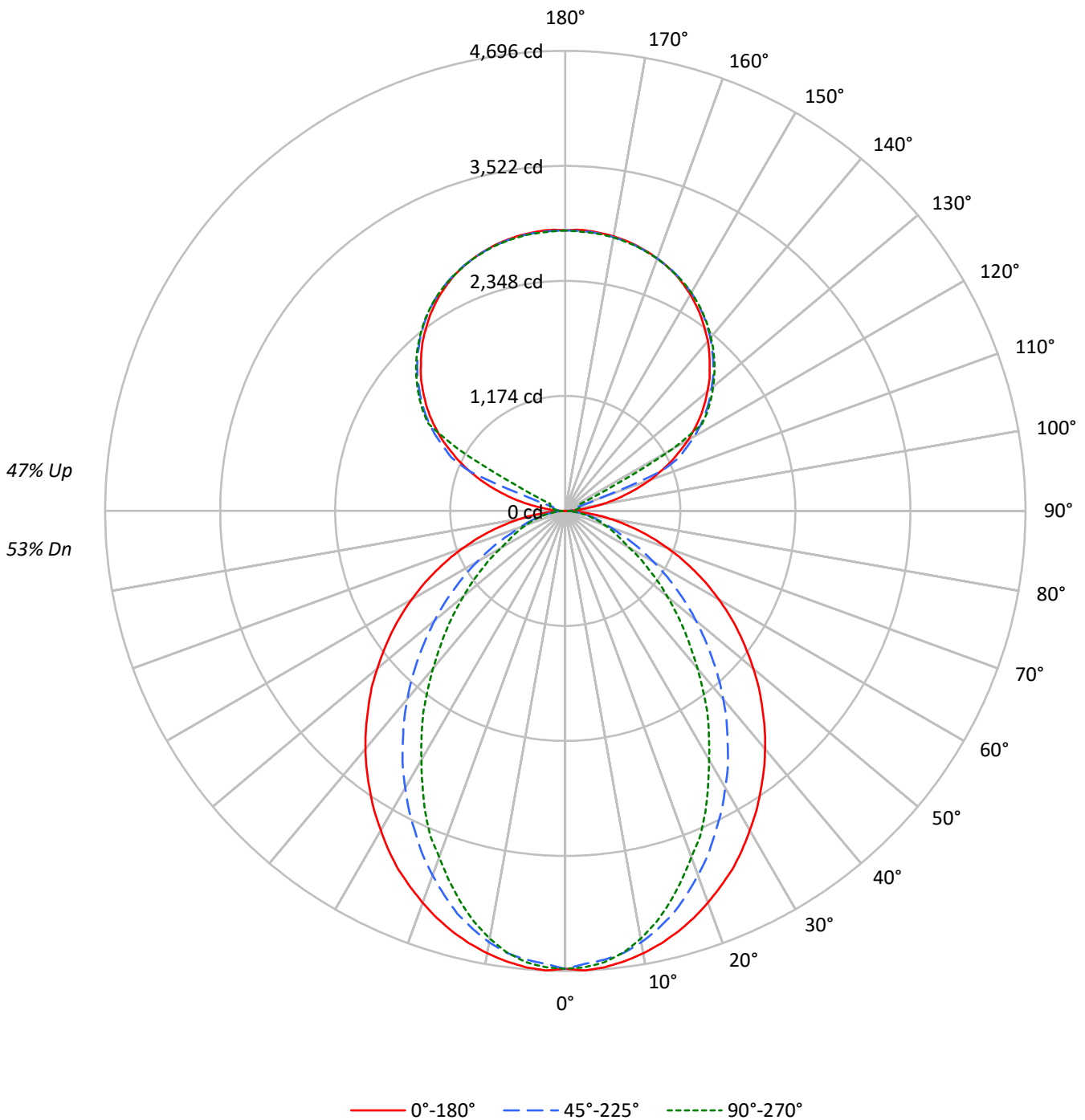
Test Method: LM-79-2019  
Report Number: P927182  
REPORT IS A COMBINATION OF REPORTS P900926 AND P896187  
Test Lab: INNOVATION CENTER  
Issue Date: 12/12/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-HX4F0-120D090US830-RLONL  
Description: 4 foot, Hexagon Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 18011.2 lumens  
Efficiency: N/A  
Efficacy: 92.8 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 3.54' x L: 4.09' x H: 0.1')  
CIE Type: General Diffuse  
  
Input Watts (W): 194.1  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9954  
Total Harmonic Distortion (THDi): 0.076  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT

TEST NUMBER: P927182  
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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	108	108	108	108	100	100	100	100	85	85	85	72	72	72	59	59	59	53	53	53	53
1	99	95	91	88	92	88	85	82	76	73	71	64	62	61	53	52	51	46	46	46	46
2	91	83	78	73	84	78	73	68	67	63	60	57	54	52	47	45	44	39	39	39	39
3	83	74	67	61	77	69	63	58	59	55	51	51	47	44	42	40	38	34	34	34	34
4	76	66	58	52	70	61	55	49	53	48	44	45	42	38	38	35	33	30	30	30	30
5	70	59	51	45	65	55	48	43	48	42	38	41	37	34	35	32	29	26	26	26	26
6	65	53	45	39	60	50	43	37	43	38	34	37	33	30	32	28	26	23	23	23	23
7	60	48	40	35	56	45	38	33	39	34	30	34	30	26	29	26	23	21	21	21	21
8	56	44	36	31	52	41	34	29	36	31	27	31	27	24	27	24	21	19	19	19	19
9	52	40	33	28	48	38	31	26	33	28	24	29	25	22	25	22	19	17	17	17	17
10	49	37	30	25	45	35	28	24	31	25	22	27	23	20	23	20	17	16	16	16	16

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

	0°	45°	90°
0°	3476	3476	3476
5°	3482	3421	3443
10°	3447	3354	3331
15°	3400	3244	3158
20°	3338	3091	2945
25°	3274	2920	2740
30°	3188	2745	2480
35°	3103	2556	2252
40°	3018	2361	1989
45°	2918	2144	1752
50°	2815	1926	1520
55°	2708	1692	1297
60°	2583	1448	1068
65°	2440	1199	961
70°	2267	968	870
75°	2049	854	792
80°	1734	717	687
85°	1212	480	518

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 2918 cd/sqm



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CATALOG NUMBER: DFN2DIP-HX4F0-120D090US830-RLLONL

**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	438.1	2.4
10°-20°	1202.7	6.7
20°-30°	1688.5	9.4
30°-40°	1840.5	10.2
40°-50°	1691.7	9.4
50°-60°	1328.5	7.4
60°-70°	864.8	4.8
70°-80°	445.1	2.5
80°-90°	118.7	0.7
90°-100°	94.4	0.5
100°-110°	351.9	2.0
110°-120°	933.3	5.2
120°-130°	1547.9	8.6
130°-140°	1644.2	9.1
140°-150°	1528.2	8.5
150°-160°	1228.6	6.8
160°-170°	791.7	4.4
170°-180°	272.5	1.5
0°-30°	3329.2	18.5
0°-40°	5169.8	28.7
0°-60°	8190.0	45.5
0°-90°	9618.5	53.4
90°-120°	1379.6	7.7
90°-150°	6099.9	33.9
90°-180°	8393.0	46.6
0°-180°	18011.2	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	4674	4674	4674	4674	4674	
5°	4674	4653	4598	4636	4624	443
15°	4446	4399	4256	4175	4133	1253
25°	4036	3900	3621	3448	3384	1856
35°	3477	3262	2889	2623	2530	2177
45°	2843	2559	2115	1815	1713	2195
55°	2162	1832	1375	1121	1041	1931
65°	1460	1117	736	592	579	1447
75°	778	482	338	309	305	823
85°	182	93	80	80	80	209
90°	2	25	41	52	56	17
95°	135	66	81	91	89	159
105°	630	692	126	149	157	673
115°	1191	1226	1278	319	170	1173
125°	1684	1711	1750	1765	1771	1502
135°	2084	2117	2136	2156	2152	1610
145°	2418	2415	2450	2465	2455	1512
155°	2662	2643	2668	2680	2664	1227
165°	2805	2792	2799	2813	2799	792
175°	2869	2854	2859	2873	2852	273
180°	2863	2863	2863	2863	2863	



TEST NUMBER: P927182

CATALOG NUMBER: DFN2DIP-HX4F0-120D090US830-RLONL

**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°
0°	4674.4	4674.4	4674.4	4674.4	4674.4
2.5°	4695.5	4674.4	4627.8	4670.4	4661.8
5°	4674.4	4653.3	4598.1	4636.3	4623.7
7.5°	4636.3	4611.1	4551.9	4568.5	4547.4
10°	4585.5	4556.0	4471.5	4458.5	4433.4
12.5°	4522.2	4484.1	4369.6	4344.5	4297.9
15°	4446.0	4399.3	4255.7	4175.3	4133.1
17.5°	4357.1	4289.3	4111.6	4018.7	3951.0
20°	4255.7	4170.8	3959.4	3854.0	3760.6
22.5°	4145.7	4048.3	3802.8	3659.2	3595.9
25°	4035.8	3900.2	3621.0	3447.8	3384.0
27.5°	3904.7	3760.6	3451.8	3253.0	3155.6
30°	3765.1	3604.0	3265.6	3050.1	2935.7
32.5°	3629.6	3434.8	3088.3	2834.3	2728.3
35°	3477.4	3261.5	2889.4	2622.9	2529.5
37.5°	3329.3	3096.4	2703.2	2411.0	2305.5
40°	3172.6	2919.1	2508.5	2208.2	2098.2
42.5°	3011.9	2741.4	2314.1	2000.8	1895.4
45°	2842.8	2559.2	2115.3	1814.6	1713.1
47.5°	2682.1	2381.9	1925.0	1624.3	1531.4
50°	2504.4	2204.1	1738.7	1446.5	1358.1
52.5°	2330.7	2013.4	1561.0	1281.8	1201.5
55°	2161.5	1831.7	1374.7	1121.1	1040.8
57.5°	1988.2	1649.8	1210.0	973.0	905.3
60°	1810.5	1472.1	1036.3	820.9	753.2
62.5°	1637.3	1298.9	888.2	685.4	651.6
65°	1459.6	1116.7	736.1	592.5	579.4
67.5°	1290.4	947.4	592.5	520.2	507.6
70°	1112.6	782.7	490.6	448.3	431.3
72.5°	943.4	630.2	410.2	376.5	368.0
75°	778.2	482.0	338.5	308.8	304.7
77.5°	613.6	342.4	266.6	249.6	241.0
80°	461.0	245.5	202.8	186.2	186.2
82.5°	321.4	165.1	139.6	131.0	131.0
85°	181.8	92.9	80.3	80.3	80.3
87.5°	67.8	33.6	33.6	29.6	29.6
90°	2.0	24.9	41.3	51.9	55.8
92.5°	51.9	43.5	49.7	53.9	55.8
95°	134.6	66.2	80.7	91.2	89.1
97.5°	242.3	72.6	105.6	111.9	113.9
100°	366.7	82.9	118.1	134.6	138.7
102.5°	503.3	499.3	122.2	144.9	151.3
105°	629.7	692.0	126.4	149.1	157.4
107.5°	776.8	828.5	130.6	153.3	161.6
110°	917.7	961.1	362.6	155.4	163.6



TEST NUMBER: P927182

CATALOG NUMBER: DFN2DIP-HX4F0-120D090US830-RLONL

**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°
112.5°	1050.3	1087.5	1052.3	159.4	165.8
115°	1191.0	1226.2	1278.1	319.0	169.9
117.5°	1313.3	1354.7	1390.0	1093.7	551.0
120°	1450.0	1481.0	1518.5	1543.2	1263.6
122.5°	1566.0	1599.1	1640.7	1653.0	1655.2
125°	1684.0	1711.0	1750.4	1764.9	1771.1
127.5°	1791.7	1820.7	1852.0	1872.7	1874.6
130°	1893.3	1926.6	1949.2	1972.0	1970.1
132.5°	1996.9	2023.9	2046.5	2065.3	2063.3
135°	2084.0	2117.1	2135.6	2156.5	2152.4
137.5°	2175.0	2199.8	2220.7	2241.4	2235.2
140°	2264.0	2280.8	2303.4	2322.0	2311.8
142.5°	2338.8	2353.3	2380.1	2396.6	2386.3
145°	2417.5	2415.3	2450.5	2465.0	2454.6
147.5°	2485.7	2479.5	2514.7	2525.1	2516.9
150°	2552.1	2537.6	2570.8	2583.0	2572.7
152.5°	2607.9	2591.4	2622.4	2634.9	2620.4
155°	2661.8	2643.3	2668.1	2680.5	2664.0
157.5°	2705.4	2688.9	2707.5	2722.0	2705.4
160°	2742.7	2730.1	2742.7	2755.0	2740.5
162.5°	2775.7	2763.3	2773.7	2788.2	2769.5
165°	2804.7	2792.3	2798.6	2813.1	2798.6
167.5°	2827.6	2815.1	2821.4	2835.9	2817.2
170°	2846.3	2833.7	2837.9	2852.4	2833.7
172.5°	2858.6	2846.3	2850.4	2864.9	2846.3
175°	2868.9	2854.4	2858.6	2873.0	2852.4
177.5°	2873.0	2858.6	2860.8	2875.3	2856.6
180°	2862.7	2862.7	2862.7	2862.7	2862.7



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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	11.79	12.65	12.72	13.59	14.82	7.76	8.62	8.70	9.57	10.79
	3H	13.47	14.24	14.42	15.19	16.44	8.95	9.72	9.90	10.68	11.93
	4H	14.08	14.81	15.04	15.77	17.02	9.41	10.13	10.37	11.09	12.35
	6H	14.50	15.17	15.48	16.14	17.41	9.73	10.40	10.70	11.37	12.63
	8H	14.63	15.27	15.61	16.25	17.52	9.82	10.46	10.80	11.44	12.71
	12H	14.69	15.30	15.68	16.28	17.57	9.87	10.47	10.85	11.45	12.74
4H	2H	11.81	12.54	12.78	13.50	14.75	8.36	9.09	9.33	10.05	11.30
	3H	13.64	14.25	14.62	15.24	16.51	9.72	10.32	10.69	11.31	12.58
	4H	14.34	14.89	15.32	15.87	17.17	10.27	10.82	11.25	11.80	13.10
	6H	14.86	15.33	15.85	16.34	17.63	10.69	11.16	11.69	12.17	13.46
	8H	15.03	15.47	16.03	16.47	17.78	10.82	11.26	11.82	12.26	13.57
	12H	15.13	15.53	16.14	16.54	17.86	10.89	11.29	11.90	12.30	13.61
8H	4H	14.31	14.75	15.31	15.75	17.06	10.55	10.99	11.55	11.99	13.30
	6H	14.88	15.24	15.90	16.28	17.59	11.07	11.44	12.09	12.48	13.78
	8H	15.09	15.42	16.12	16.45	17.77	11.26	11.58	12.29	12.61	13.94
	12H	15.24	15.52	16.27	16.54	17.91	11.39	11.67	12.42	12.69	14.06
12H	4H	14.26	14.66	15.28	15.68	16.99	10.56	10.95	11.57	11.97	13.28
	6H	14.85	15.17	15.88	16.20	17.53	11.12	11.44	12.15	12.47	13.80
	8H	15.08	15.36	16.11	16.38	17.75	11.33	11.62	12.37	12.64	14.01