

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: P903462

Luminaire Tested: DFN2DIP-PN4F0-120D110US830-RLLFLL

Issue Date: 11/21/2024

**Test Information**

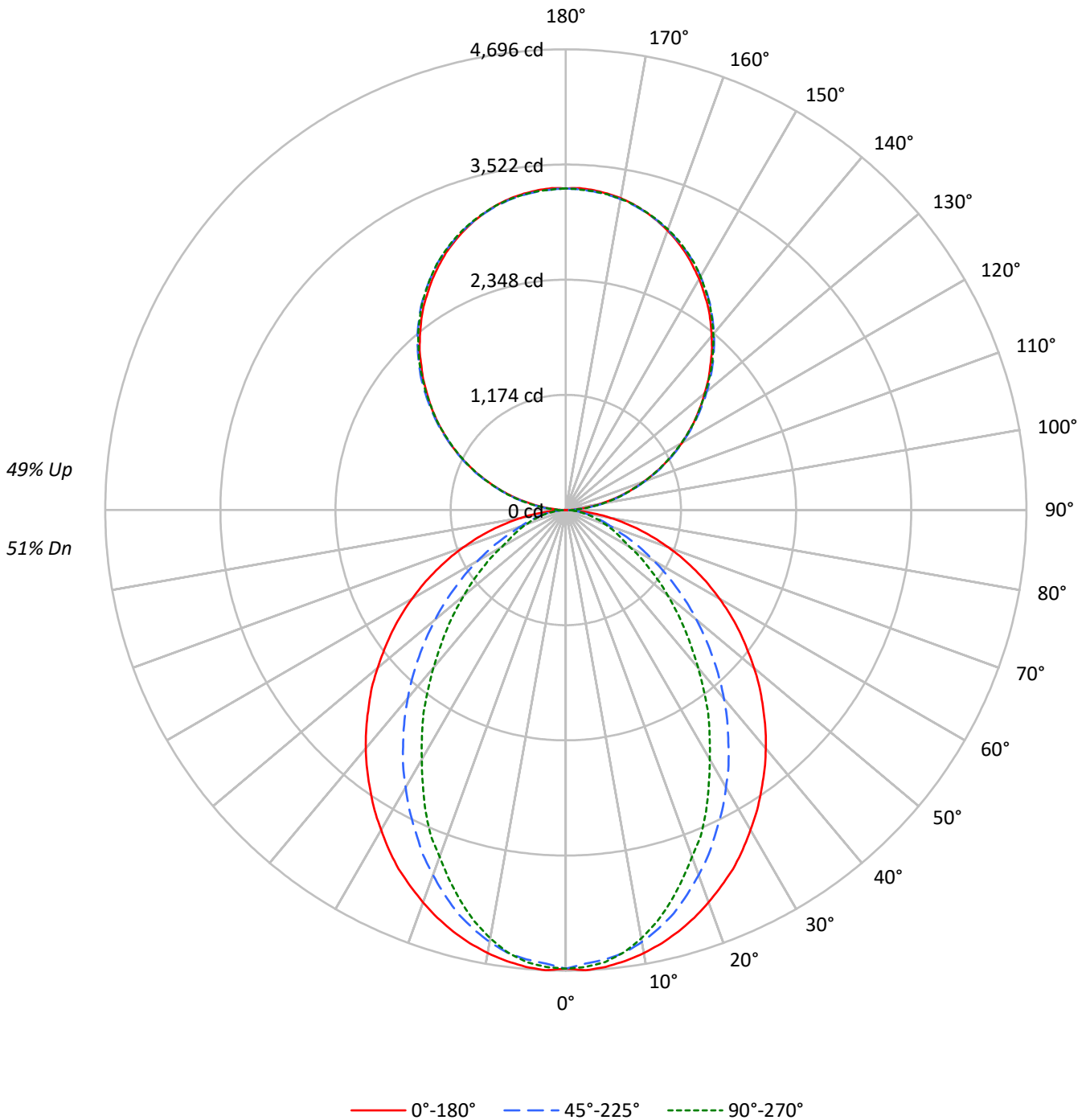
Test Method: LM-79-2019  
Report Number: P903462  
REPORT IS A COMBINATION OF REPORTS P899752 AND P896497  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-PN4F0-120D110US830-RLLFLL  
Description: 4 foot, Pentagon Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 18789.5 lumens  
Efficiency: N/A  
Efficacy: 86.2 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): 217.9  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9781  
Total Harmonic Distortion (THDi): 0.075  
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	107	107	107	107	99	99	99	99	84	84	84	70	70	70	57	57	57	51	51	51	51
1	99	94	91	87	91	87	84	81	74	72	70	62	61	59	51	50	49	44	44	44	44
2	90	83	77	72	83	77	72	68	66	62	59	55	53	50	46	44	42	38	38	38	38
3	83	73	66	61	76	68	62	57	58	54	50	49	46	43	41	39	37	33	33	33	33
4	76	65	58	52	70	61	54	49	52	47	43	44	41	37	37	34	32	28	28	28	28
5	70	58	51	45	64	54	47	42	47	42	37	40	36	33	34	31	28	25	25	25	25
6	64	53	45	39	59	49	42	37	43	37	33	36	32	29	31	27	25	22	22	22	22
7	60	48	40	34	55	45	38	33	39	33	29	33	29	26	28	25	22	20	20	20	20
8	55	43	36	31	51	41	34	29	35	30	26	31	26	23	26	23	20	18	18	18	18
9	52	40	32	27	48	37	31	26	33	27	24	28	24	21	24	21	18	16	16	16	16
10	48	37	29	25	45	34	28	24	30	25	21	26	22	19	22	19	17	15	15	15	15

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

	0°	45°	90°
0°	3412	3412	3412
5°	3418	3359	3380
10°	3384	3293	3271
15°	3337	3185	3101
20°	3276	3035	2893
25°	3213	2867	2692
30°	3128	2695	2437
35°	3045	2510	2213
40°	2960	2319	1956
45°	2862	2106	1723
50°	2761	1892	1495
55°	2655	1662	1276
60°	2532	1422	1051
65°	2391	1178	947
70°	2220	951	858
75°	2005	839	781
80°	1694	705	680
85°	1180	473	515

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 2862 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	438.1	2.3
10°-20°	1202.7	6.4
20°-30°	1688.5	9.0
30°-40°	1840.6	9.8
40°-50°	1691.7	9.0
50°-60°	1328.6	7.1
60°-70°	864.8	4.6
70°-80°	445.2	2.4
80°-90°	122.9	0.7
90°-100°	202.9	1.1
100°-110°	644.7	3.4
110°-120°	1103.3	5.9
120°-130°	1451.0	7.7
130°-140°	1628.6	8.7
140°-150°	1597.1	8.5
150°-160°	1339.7	7.1
160°-170°	888.5	4.7
170°-180°	310.5	1.7
0°-30°	3329.4	17.7
0°-40°	5170.0	27.5
0°-60°	8190.3	43.6
0°-90°	9623.2	51.2
90°-120°	1950.9	10.4
90°-150°	6627.6	35.3
90°-180°	9166.0	48.8
0°-180°	18789.5	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	4675	4675	4675	4675	4675	
5°	4675	4654	4598	4636	4624	443
15°	4446	4400	4256	4176	4133	1253
25°	4036	3900	3621	3448	3384	1856
35°	3478	3262	2890	2623	2530	2177
45°	2843	2559	2115	1815	1713	2195
55°	2162	1832	1375	1121	1041	1932
65°	1460	1117	736	592	580	1447
75°	778	482	338	309	305	823
85°	182	93	80	80	80	209
90°	3	36	97	91	94	18
95°	144	172	177	177	172	161
105°	595	603	609	614	614	628
115°	1107	1123	1118	1115	1107	1095
125°	1610	1635	1627	1618	1615	1439
135°	2083	2114	2119	2116	2109	1610
145°	2529	2548	2564	2567	2556	1580
155°	2892	2899	2908	2922	2913	1331
165°	3146	3142	3142	3162	3148	887
175°	3273	3265	3259	3279	3262	311
180°	3279	3279	3279	3279	3279	



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**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°
0°	4674.6	4674.6	4674.6	4674.6	4674.6
2.5°	4695.7	4674.6	4628.0	4670.6	4662.0
5°	4674.6	4653.5	4598.3	4636.5	4623.9
7.5°	4636.5	4611.3	4552.1	4568.7	4547.6
10°	4585.8	4556.2	4471.7	4458.7	4433.6
12.5°	4522.4	4484.3	4369.8	4344.7	4298.1
15°	4446.2	4399.5	4255.9	4175.5	4133.3
17.5°	4357.3	4289.5	4111.7	4018.9	3951.1
20°	4255.9	4171.0	3959.6	3854.1	3760.7
22.5°	4145.9	4048.5	3803.0	3659.3	3596.1
25°	4036.0	3900.3	3621.2	3447.9	3384.2
27.5°	3904.9	3760.7	3452.0	3253.2	3155.7
30°	3765.3	3604.2	3265.7	3050.3	2935.8
32.5°	3629.7	3434.9	3088.4	2834.4	2728.5
35°	3477.6	3261.7	2889.6	2623.0	2529.6
37.5°	3329.4	3096.5	2703.3	2411.1	2305.6
40°	3172.8	2919.2	2508.6	2208.3	2098.3
42.5°	3012.1	2741.5	2314.2	2000.9	1895.5
45°	2842.9	2559.3	2115.3	1814.7	1713.2
47.5°	2682.2	2382.0	1925.0	1624.4	1531.4
50°	2504.5	2204.2	1738.8	1446.6	1358.2
52.5°	2330.8	2013.5	1561.0	1281.9	1201.6
55°	2161.6	1831.7	1374.8	1121.2	1040.8
57.5°	1988.3	1649.9	1210.0	973.1	905.3
60°	1810.6	1472.2	1036.3	821.0	753.2
62.5°	1637.4	1298.9	888.3	685.4	651.7
65°	1459.6	1116.7	736.1	592.5	579.5
67.5°	1290.4	947.4	592.5	520.2	507.7
70°	1112.7	782.8	490.6	448.4	431.3
72.5°	943.5	630.2	410.2	376.5	368.1
75°	778.3	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°	2.9	35.6	96.9	91.0	93.9
92.5°	61.3	83.0	86.0	89.0	89.0
95°	144.3	172.0	176.9	176.9	172.0
97.5°	240.3	265.9	276.8	276.8	276.8
100°	350.9	373.6	381.5	381.5	378.6
102.5°	467.6	484.4	495.3	498.2	495.3
105°	595.1	603.0	609.0	613.9	613.9
107.5°	721.6	733.5	733.5	735.5	721.6
110°	844.2	860.1	860.1	860.1	852.2



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**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°
112.5°	976.7	993.4	990.5	982.6	976.7
115°	1107.2	1122.9	1118.0	1115.1	1107.2
117.5°	1236.7	1258.4	1244.5	1236.7	1228.8
120°	1367.2	1388.9	1367.2	1367.2	1358.3
122.5°	1485.8	1513.4	1499.6	1491.7	1485.8
125°	1610.3	1635.0	1627.1	1618.3	1615.2
127.5°	1731.9	1762.6	1751.7	1739.8	1731.9
130°	1845.6	1881.2	1876.2	1870.3	1859.4
132.5°	1973.1	2000.8	2002.8	1989.0	1981.0
135°	2082.8	2113.5	2119.4	2116.5	2108.6
137.5°	2205.5	2230.1	2235.1	2233.1	2221.3
140°	2313.2	2337.9	2351.7	2351.7	2340.9
142.5°	2423.9	2448.6	2456.5	2459.5	2448.6
145°	2528.7	2548.4	2564.3	2567.2	2556.4
147.5°	2622.6	2647.3	2659.2	2664.1	2653.3
150°	2719.5	2736.3	2747.1	2756.1	2747.1
152.5°	2805.5	2822.3	2836.1	2847.0	2836.1
155°	2891.5	2899.4	2908.3	2922.2	2913.2
157.5°	2965.6	2971.6	2976.5	2996.2	2982.4
160°	3031.9	3037.8	3040.7	3057.6	3045.7
162.5°	3093.1	3093.1	3096.2	3114.9	3101.1
165°	3145.5	3142.5	3142.5	3162.3	3148.5
167.5°	3193.0	3184.1	3184.1	3203.9	3190.0
170°	3228.6	3220.7	3217.7	3237.4	3220.7
172.5°	3253.3	3245.4	3242.4	3262.2	3245.4
175°	3273.1	3265.2	3259.2	3279.0	3262.2
177.5°	3283.9	3276.0	3270.1	3286.9	3270.1
180°	3279.0	3279.0	3279.0	3279.0	3279.0



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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	11.53	12.37	12.48	13.33	14.59	7.50	8.34	8.45	9.30	10.56
	3H	13.21	13.96	14.18	14.94	16.22	8.69	9.44	9.65	10.41	11.69
	4H	13.82	14.53	14.80	15.51	16.80	9.14	9.85	10.12	10.82	12.11
	6H	14.25	14.90	15.24	15.88	17.18	9.46	10.11	10.45	11.10	12.40
	8H	14.38	15.00	15.37	16.00	17.29	9.55	10.17	10.55	11.17	12.47
	12H	14.44	15.03	15.44	16.02	17.34	9.59	10.19	10.59	11.18	12.50
4H	2H	11.55	12.26	12.53	13.24	14.53	8.09	8.80	9.08	9.78	11.07
	3H	13.38	13.97	14.38	14.98	16.28	9.45	10.04	10.44	11.04	12.34
	4H	14.08	14.62	15.08	15.62	16.94	9.99	10.53	11.00	11.53	12.86
	6H	14.60	15.06	15.61	16.08	17.41	10.42	10.88	11.43	11.90	13.23
	8H	14.77	15.21	15.79	16.22	17.56	10.54	10.98	11.56	11.99	13.33
	12H	14.87	15.26	15.90	16.29	17.64	10.61	11.00	11.64	12.03	13.38
8H	4H	14.05	14.48	15.06	15.50	16.83	10.28	10.71	11.29	11.73	13.06
	6H	14.62	14.97	15.65	16.03	17.37	10.80	11.15	11.84	12.21	13.55
	8H	14.83	15.15	15.88	16.19	17.55	10.99	11.30	12.04	12.35	13.70
	12H	14.98	15.25	16.03	16.29	17.69	11.11	11.39	12.16	12.42	13.82
12H	4H	14.00	14.39	15.03	15.42	16.76	10.28	10.67	11.32	11.71	13.05
	6H	14.59	14.91	15.64	15.95	17.30	10.85	11.16	11.89	12.21	13.56
	8H	14.81	15.09	15.86	16.13	17.53	11.06	11.34	12.11	12.37	13.77