

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: P903442

Luminaire Tested: DFN2DIP-PN4F0-120D060US830-RLLFLL

Issue Date: 11/21/2024

**Test Information**

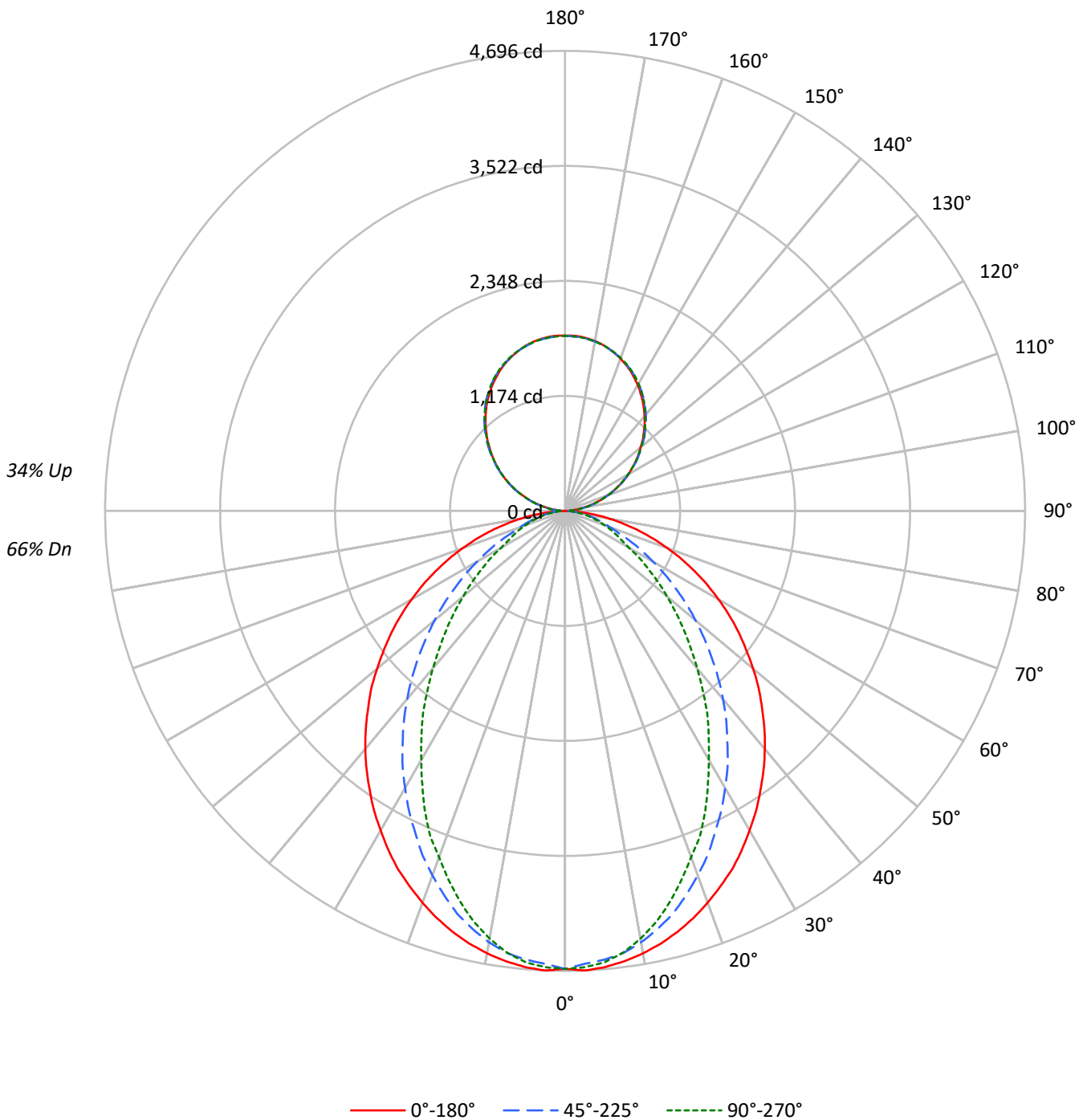
Test Method: LM-79-2019  
Report Number: P903442  
REPORT IS A COMBINATION OF REPORTS P899662 AND P896497  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-PN4F0-120D060US830-RLLFLL  
Description: 4 foot, Pentagon Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 14618.8 lumens  
Efficiency: N/A  
Efficacy: 85.3 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: Semi-Direct  
  
Input Watts (W): 171.4  
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				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	111	111	111	111	104	104	104	104	92	92	92	81	81	81	71	71	71	66				66
1	102	98	94	91	96	92	89	86	82	79	77	72	70	69	63	62	61	57				57
2	93	86	80	75	88	81	76	72	72	68	65	64	61	58	57	54	52	49				49
3	86	76	69	63	80	72	66	61	65	59	55	57	53	50	51	48	45	42				42
4	79	68	60	54	74	65	58	52	58	52	48	52	47	44	46	42	40	36				36
5	73	61	53	47	68	58	51	45	52	46	42	47	42	38	42	38	35	32				32
6	67	55	47	41	63	52	45	40	47	41	37	42	38	34	38	34	31	29				29
7	62	50	42	37	59	48	40	35	43	37	33	39	34	30	35	31	28	26				26
8	58	46	38	33	55	44	37	32	40	34	29	36	31	27	32	28	25	23				23
9	54	42	35	29	51	40	33	29	36	31	27	33	28	25	30	26	23	21				21
10	51	39	31	27	48	37	30	26	34	28	24	31	26	23	28	24	21	19				19

**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	3.0
10°-20°	1202.7	8.2
20°-30°	1688.5	11.6
30°-40°	1840.6	12.6
40°-50°	1691.7	11.6
50°-60°	1328.6	9.1
60°-70°	864.8	5.9
70°-80°	445.2	3.0
80°-90°	118.7	0.8
90°-100°	110.7	0.8
100°-110°	351.6	2.4
110°-120°	601.8	4.1
120°-130°	791.4	5.4
130°-140°	888.4	6.1
140°-150°	871.1	6.0
150°-160°	730.8	5.0
160°-170°	484.6	3.3
170°-180°	169.4	1.2
0°-30°	3329.4	22.8
0°-40°	5170.0	35.4
0°-60°	8190.3	56.0
0°-90°	9619.0	65.8
90°-120°	1064.1	7.3
90°-150°	3615.0	24.7
90°-180°	5000.0	34.2
0°-180°	14618.8	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°	2	19	53	50	51	14
95°	79	94	96	96	94	88
105°	325	329	332	335	335	343
115°	604	613	610	608	604	597
125°	878	892	888	883	881	785
135°	1136	1153	1156	1154	1150	878
145°	1379	1390	1399	1400	1394	862
155°	1577	1582	1586	1594	1589	726
165°	1716	1714	1714	1725	1717	484
175°	1785	1781	1778	1789	1779	170
180°	1789	1789	1789	1789	1789	



TEST NUMBER: P903442

CATALOG NUMBER: DFN2DIP-PN4F0-120D060US830-RLFL

**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°	1.6	19.4	52.9	49.6	51.2
92.5°	33.5	45.3	46.9	48.5	48.5
95°	78.7	93.8	96.5	96.5	93.8
97.5°	131.0	145.1	151.0	151.0	151.0
100°	191.4	203.8	208.1	208.1	206.5
102.5°	255.1	264.2	270.1	271.7	270.1
105°	324.6	328.9	332.2	334.9	334.9
107.5°	393.6	400.1	400.1	401.1	393.6
110°	460.5	469.1	469.1	469.1	464.8



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**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°
112.5°	532.7	541.9	540.3	535.9	532.7
115°	603.9	612.6	609.8	608.2	603.9
117.5°	674.6	686.5	678.8	674.6	670.2
120°	745.7	757.6	745.7	745.7	740.8
122.5°	810.4	825.5	817.9	813.7	810.4
125°	878.4	891.8	887.5	882.7	881.1
127.5°	944.7	961.4	955.5	949.0	944.7
130°	1006.7	1026.1	1023.4	1020.2	1014.3
132.5°	1076.3	1091.4	1092.4	1084.9	1080.5
135°	1136.1	1152.8	1156.0	1154.4	1150.1
137.5°	1203.0	1216.4	1219.2	1218.0	1211.6
140°	1261.8	1275.3	1282.8	1282.8	1276.9
142.5°	1322.1	1335.6	1339.9	1341.5	1335.6
145°	1379.3	1390.1	1398.7	1400.3	1394.4
147.5°	1430.5	1444.0	1450.5	1453.1	1447.2
150°	1483.4	1492.5	1498.5	1503.3	1498.5
152.5°	1530.2	1539.5	1547.0	1552.9	1547.0
155°	1577.2	1581.5	1586.3	1593.9	1589.0
157.5°	1617.6	1620.9	1623.5	1634.4	1626.8
160°	1653.8	1657.0	1658.6	1667.7	1661.3
162.5°	1687.2	1687.2	1688.8	1699.0	1691.5
165°	1715.7	1714.1	1714.1	1724.9	1717.4
167.5°	1741.6	1736.8	1736.8	1747.6	1740.0
170°	1761.0	1756.7	1755.1	1765.9	1756.7
172.5°	1774.5	1770.2	1768.6	1779.3	1770.2
175°	1785.3	1781.0	1777.7	1788.6	1779.3
177.5°	1791.2	1787.0	1783.7	1792.8	1783.7
180°	1788.6	1788.6	1788.6	1788.6	1788.6



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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	12.78	13.76	13.59	14.59	15.62	8.74	9.72	9.56	10.56	11.58
	3H	14.47	15.35	15.30	16.19	17.25	9.94	10.82	10.77	11.66	12.72
	4H	15.09	15.91	15.93	16.76	17.83	10.40	11.23	11.25	12.08	13.15
	6H	15.52	16.28	16.38	17.14	18.22	10.73	11.49	11.59	12.35	13.43
	8H	15.65	16.37	16.52	17.25	18.33	10.83	11.55	11.69	12.42	13.51
	12H	15.72	16.41	16.59	17.28	18.38	10.87	11.56	11.75	12.43	13.54
4H	2H	12.81	13.64	13.67	14.49	15.56	9.36	10.18	10.21	11.03	12.10
	3H	14.66	15.35	15.52	16.23	17.31	10.72	11.41	11.58	12.29	13.38
	4H	15.36	15.98	16.23	16.86	17.97	11.28	11.90	12.15	12.78	13.89
	6H	15.89	16.42	16.78	17.33	18.44	11.71	12.24	12.59	13.15	14.26
	8H	16.07	16.57	16.96	17.47	18.59	11.84	12.34	12.73	13.24	14.36
	12H	16.17	16.62	17.08	17.54	18.67	11.91	12.36	12.82	13.28	14.41
8H	4H	15.34	15.84	16.23	16.74	17.87	11.57	12.07	12.46	12.97	14.10
	6H	15.91	16.33	16.83	17.27	18.40	12.10	12.51	13.01	13.45	14.58
	8H	16.13	16.50	17.06	17.43	18.58	12.29	12.65	13.22	13.59	14.73
	12H	16.28	16.60	17.21	17.53	18.72	12.41	12.74	13.34	13.66	14.86
12H	4H	15.30	15.75	16.21	16.67	17.80	11.58	12.03	12.49	12.95	14.08
	6H	15.89	16.26	16.82	17.19	18.33	12.15	12.51	13.07	13.45	14.59
	8H	16.12	16.44	17.05	17.37	18.56	12.36	12.69	13.29	13.61	14.81