

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: P917068

Luminaire Tested: DFN2DIP-PN4F0-110D120US930-FLLFLL

Issue Date: 11/21/2024

**Test Information**

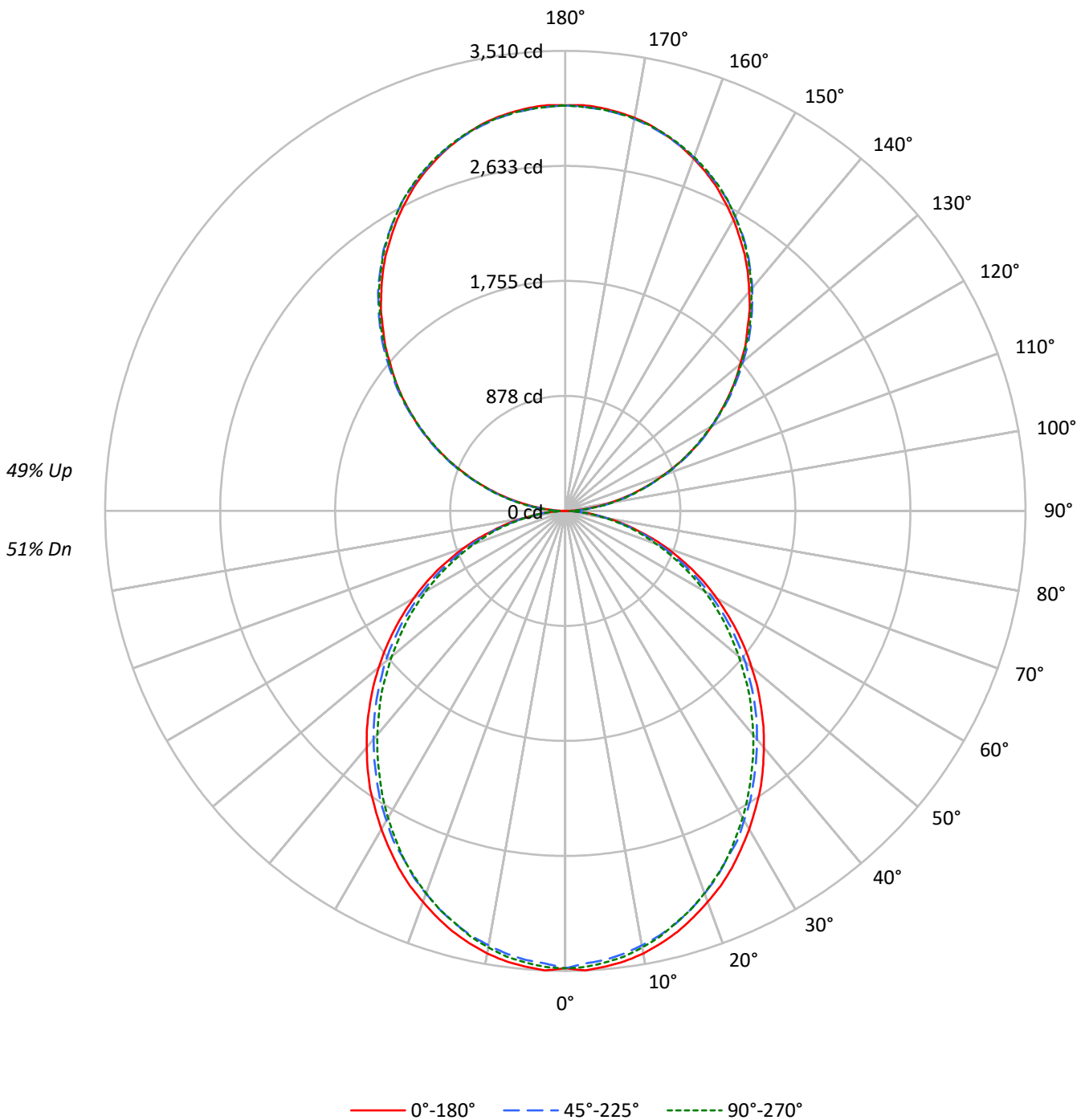
Test Method: LM-79-2019  
Report Number: P917068  
REPORT IS A COMBINATION OF REPORTS P899767 AND P896497  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-PN4F0-110D120US930-FLLFLL  
Description: 4 foot, Pentagon Define Geo, with Direct Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 17537.0 lumens  
Efficiency: N/A  
Efficacy: 80.5 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
Luminous Opening: Rectangular w/ Sides (W: 3.74' x L: 3.94' x H: 0.1')  
CIE Type: General Diffuse  
  
Input Watts (W): 217.8  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.996  
Total Harmonic Distortion (THDi): 0.064  
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	107	107	107	107	99	99	99	99	84	84	84	70	70	70	57	57	57	57	57	57	51
1	98	94	90	86	90	87	83	80	73	71	69	61	60	58	50	49	48	48	48	48	43
2	89	82	76	70	82	76	70	66	64	60	57	54	51	48	44	42	40	40	40	40	36
3	81	72	65	59	75	67	60	55	57	52	48	48	44	41	39	37	34	34	34	34	30
4	74	64	56	50	68	59	52	47	50	45	41	42	38	35	35	32	30	30	30	30	26
5	68	57	49	43	63	53	45	40	45	40	35	38	34	30	32	28	26	26	26	26	23
6	63	51	43	37	58	47	40	35	41	35	31	34	30	27	29	25	23	23	23	23	20
7	58	46	38	32	54	43	36	31	37	31	27	31	27	24	26	23	20	20	20	20	18
8	54	42	34	29	50	39	32	27	34	28	24	29	24	21	24	21	18	18	18	18	16
9	50	38	31	25	46	36	29	24	31	25	22	26	22	19	22	19	16	16	16	16	14
10	47	35	28	23	43	33	26	22	28	23	19	24	20	17	21	17	15	15	15	15	13

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

	0°	45°	90°
0°	2547	2547	2547
5°	2551	2512	2529
10°	2531	2479	2495
15°	2493	2438	2442
20°	2443	2382	2388
25°	2393	2314	2325
30°	2330	2252	2245
35°	2271	2177	2160
40°	2198	2103	2080
45°	2125	2028	1997
50°	2045	1949	1902
55°	1962	1858	1814
60°	1867	1750	1714
65°	1765	1638	1595
70°	1634	1502	1468
75°	1452	1339	1351
80°	1234	1131	1127
85°	893	772	754

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 90°  
 Vertical Angle: 90°  
 Luminance: 2422 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	328.4	1.9
10°-20°	924.1	5.3
20°-30°	1358.1	7.7
30°-40°	1577.3	9.0
40°-50°	1575.4	9.0
50°-60°	1373.7	7.8
60°-70°	1015.5	5.8
70°-80°	574.5	3.3
80°-90°	160.4	0.9
90°-100°	191.5	1.1
100°-110°	608.3	3.5
110°-120°	1041.1	5.9
120°-130°	1369.2	7.8
130°-140°	1536.9	8.8
140°-150°	1507.1	8.6
150°-160°	1264.2	7.2
160°-170°	838.4	4.8
170°-180°	293.0	1.7
0°-30°	2610.6	14.9
0°-40°	4187.9	23.9
0°-60°	7137.0	40.7
0°-90°	8887.4	50.7
90°-120°	1840.9	10.5
90°-150°	6254.0	35.7
90°-180°	8650.0	49.3
0°-180°	17537.0	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	3490	3490	3490	3490	3490	
5°	3490	3476	3439	3466	3460	331
15°	3322	3302	3258	3272	3255	936
25°	3006	2980	2923	2929	2923	1383
35°	2594	2560	2507	2486	2470	1620
45°	2111	2087	2037	2000	1987	1629
55°	1597	1577	1537	1497	1480	1428
65°	1077	1057	1024	993	977	1065
75°	564	557	540	520	527	602
85°	138	134	131	121	118	153
90°	3	34	91	86	89	17
95°	136	162	167	167	162	152
105°	562	569	575	579	579	593
115°	1045	1060	1055	1052	1045	1033
125°	1520	1543	1536	1527	1524	1358
135°	1965	1994	2000	1997	1990	1519
145°	2386	2405	2420	2423	2412	1491
155°	2728	2736	2744	2757	2749	1256
165°	2968	2966	2966	2984	2971	837
175°	3089	3081	3076	3094	3078	293
180°	3094	3094	3094	3094	3094	



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**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°
0°	3489.6	3489.6	3489.6	3489.6	3489.6
2.5°	3509.9	3493.1	3456.1	3489.6	3483.2
5°	3489.6	3476.4	3439.4	3466.1	3459.7
7.5°	3466.1	3446.2	3409.2	3436.2	3429.5
10°	3429.5	3405.9	3365.7	3392.4	3382.4
12.5°	3378.9	3358.9	3318.8	3335.5	3328.7
15°	3321.9	3302.0	3258.2	3271.7	3255.0
17.5°	3251.4	3231.5	3187.7	3204.4	3187.7
20°	3174.2	3154.2	3107.3	3117.2	3104.1
22.5°	3097.3	3067.0	3023.2	3023.2	3016.4
25°	3006.5	2979.8	2922.8	2929.3	2922.8
27.5°	2905.7	2882.2	2838.8	2828.8	2812.1
30°	2805.4	2778.3	2728.1	2718.1	2704.6
32.5°	2697.8	2677.9	2624.1	2603.8	2590.3
35°	2593.9	2560.4	2506.6	2486.3	2469.6
37.5°	2476.4	2446.1	2392.4	2368.8	2352.1
40°	2355.7	2328.7	2274.9	2245.0	2231.5
42.5°	2238.2	2211.2	2157.8	2123.9	2104.0
45°	2110.8	2087.2	2036.7	2000.1	1986.6
47.5°	1986.6	1963.1	1909.3	1872.3	1852.3
50°	1855.5	1838.8	1791.8	1744.8	1728.1
52.5°	1728.1	1704.5	1661.2	1624.1	1600.6
55°	1597.4	1577.1	1536.9	1496.6	1479.9
57.5°	1466.4	1449.7	1405.9	1365.6	1352.1
60°	1335.4	1322.3	1275.2	1238.2	1228.2
62.5°	1207.9	1184.5	1151.0	1117.5	1104.0
65°	1077.3	1057.0	1023.5	993.3	976.6
67.5°	943.1	926.0	896.1	872.6	859.1
70°	818.8	805.3	775.0	751.5	738.3
72.5°	691.4	677.8	661.1	637.6	627.6
75°	563.5	557.2	540.1	520.2	526.9
77.5°	449.6	436.1	429.3	419.4	409.4
80°	335.7	332.2	325.4	315.4	308.7
82.5°	228.2	228.2	225.0	211.5	211.5
85°	137.5	134.2	131.0	120.7	117.5
87.5°	60.5	53.7	47.0	37.0	33.4
90°	2.8	33.6	91.4	85.9	88.6
92.5°	57.8	78.4	81.1	84.0	84.0
95°	136.2	162.3	167.0	167.0	162.3
97.5°	226.7	250.9	261.2	261.2	261.2
100°	331.2	352.6	360.0	360.0	357.3
102.5°	441.2	457.1	467.3	470.2	467.3
105°	561.6	569.0	574.6	579.3	579.3
107.5°	680.9	692.2	692.2	694.0	680.9
110°	796.6	811.5	811.5	811.5	804.1



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**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°
112.5°	921.6	937.5	934.7	927.2	921.6
115°	1044.7	1059.7	1055.0	1052.2	1044.7
117.5°	1166.9	1187.5	1174.4	1166.9	1159.5
120°	1290.1	1310.6	1290.1	1290.1	1281.7
122.5°	1402.1	1428.2	1415.1	1407.6	1402.1
125°	1519.6	1542.9	1535.5	1527.1	1524.2
127.5°	1634.3	1663.2	1652.9	1641.8	1634.3
130°	1741.6	1775.1	1770.5	1764.9	1754.6
132.5°	1861.9	1888.1	1889.9	1876.8	1869.4
135°	1965.4	1994.4	2000.0	1997.2	1989.7
137.5°	2081.1	2104.4	2109.1	2107.2	2096.1
140°	2182.8	2206.1	2219.2	2219.2	2208.9
142.5°	2287.3	2310.6	2318.1	2320.8	2310.6
145°	2386.1	2404.8	2419.7	2422.6	2412.3
147.5°	2474.8	2498.1	2509.3	2514.0	2503.7
150°	2566.2	2582.0	2592.3	2600.7	2592.3
152.5°	2647.4	2663.2	2676.3	2686.6	2676.3
155°	2728.5	2736.0	2744.4	2757.4	2749.0
157.5°	2798.5	2804.1	2808.7	2827.4	2814.3
160°	2861.0	2866.6	2869.4	2885.3	2874.0
162.5°	2918.8	2918.8	2921.6	2939.3	2926.3
165°	2968.3	2965.5	2965.5	2984.1	2971.0
167.5°	3013.0	3004.6	3004.6	3023.3	3010.2
170°	3046.6	3039.1	3036.3	3055.0	3039.1
172.5°	3069.9	3062.4	3059.7	3078.3	3062.4
175°	3088.6	3081.1	3075.5	3094.1	3078.3
177.5°	3098.9	3091.4	3085.7	3101.6	3085.7
180°	3094.1	3094.1	3094.1	3094.1	3094.1



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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	10.59	11.46	11.54	12.42	13.69	10.15	11.02	11.10	11.98	13.24
	3H	12.25	13.03	13.21	14.01	15.29	11.77	12.55	12.73	13.52	14.81
	4H	12.84	13.58	13.82	14.56	15.85	12.35	13.09	13.33	14.07	15.36
	6H	13.24	13.92	14.23	14.91	16.21	12.75	13.43	13.74	14.42	15.72
	8H	13.35	14.00	14.34	15.00	16.30	12.86	13.50	13.85	14.51	15.81
	12H	13.40	14.02	14.40	15.01	16.34	12.90	13.52	13.90	14.51	15.84
4H	2H	11.05	11.79	12.03	12.77	14.06	10.70	11.44	11.68	12.42	13.71
	3H	12.92	13.54	13.91	14.55	15.85	12.52	13.13	13.51	14.14	15.45
	4H	13.64	14.20	14.64	15.20	16.53	13.22	13.78	14.22	14.78	16.11
	6H	14.16	14.64	15.17	15.67	16.99	13.73	14.22	14.74	15.24	16.57
	8H	14.31	14.76	15.32	15.78	17.12	13.88	14.33	14.89	15.35	16.69
	12H	14.38	14.79	15.41	15.83	17.17	13.94	14.35	14.97	15.39	16.73
8H	4H	13.83	14.29	14.85	15.31	16.65	13.46	13.92	14.48	14.94	16.28
	6H	14.47	14.84	15.51	15.91	17.24	14.09	14.47	15.13	15.53	16.87
	8H	14.69	15.02	15.74	16.07	17.43	14.31	14.64	15.35	15.68	17.04
	12H	14.83	15.12	15.88	16.16	17.56	14.42	14.71	15.47	15.76	17.16
12H	4H	13.82	14.23	14.85	15.26	16.61	13.46	13.87	14.49	14.90	16.25
	6H	14.50	14.83	15.55	15.88	17.24	14.13	14.46	15.18	15.51	16.87
	8H	14.74	15.03	15.79	16.08	17.48	14.37	14.66	15.42	15.70	17.11