

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: P903428

Luminaire Tested: DFN2DIP-PN4F0-110D120US830-FLLFLL

Issue Date: 11/21/2024

**Test Information**

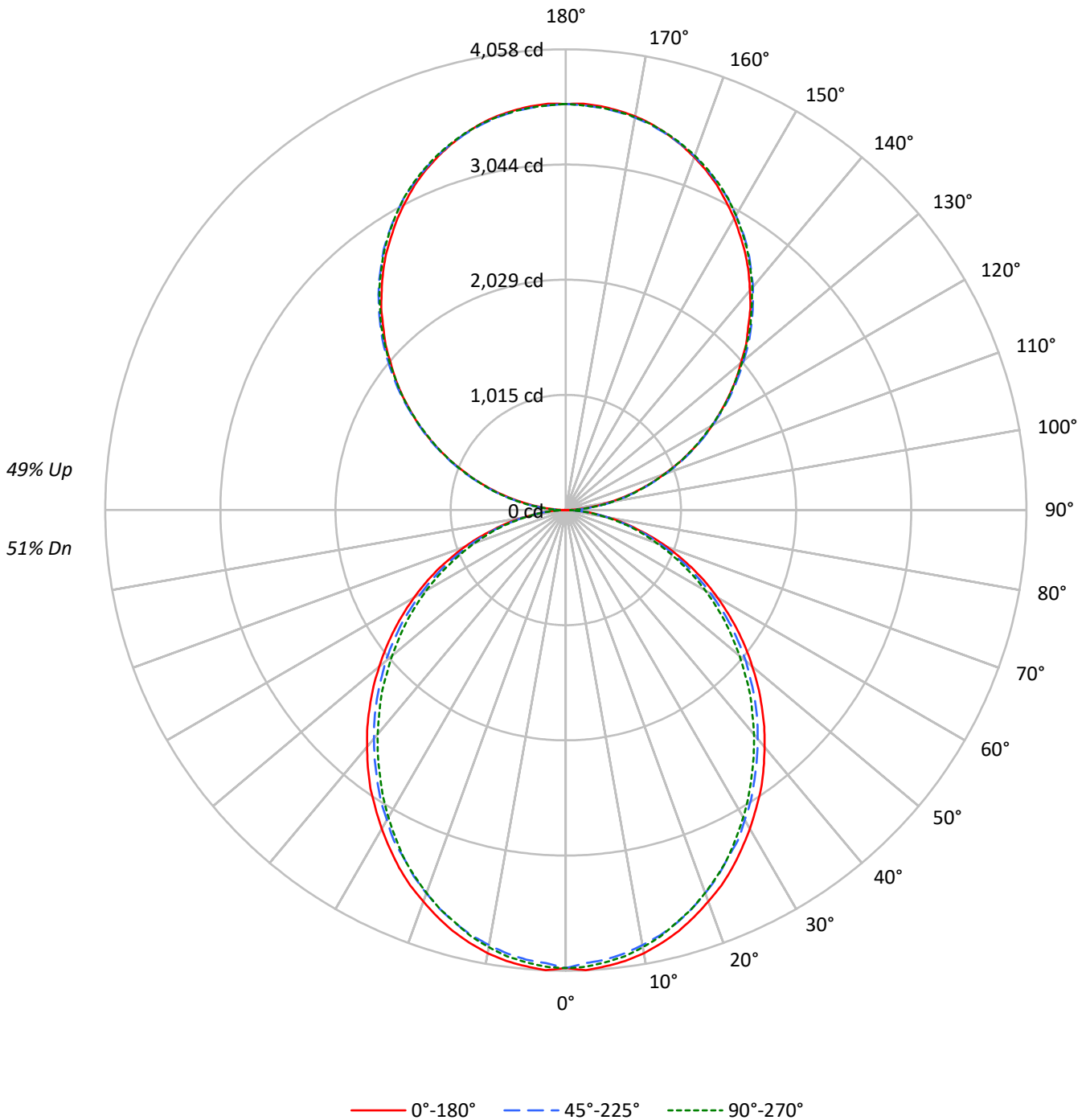
Test Method: LM-79-2019  
Report Number: P903428  
REPORT IS A COMBINATION OF REPORTS P899767 AND P896497  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-PN4F0-110D120US830-FLLFLL  
Description: 4 foot, Pentagon Define Geo, with Direct Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 20274.0 lumens  
Efficiency: N/A  
Efficacy: 93.1 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°	2945	2945	2945
5°	2950	2904	2924
10°	2926	2865	2885
15°	2883	2819	2824
20°	2824	2754	2761
25°	2767	2676	2688
30°	2694	2603	2595
35°	2625	2517	2498
40°	2541	2431	2404
45°	2457	2344	2309
50°	2364	2253	2199
55°	2268	2148	2097
60°	2159	2023	1981
65°	2040	1894	1844
70°	1889	1737	1697
75°	1678	1548	1562
80°	1426	1308	1303
85°	1031	893	871

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 90°  
 Vertical Angle: 90°  
 Luminance: 2802 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	379.7	1.9
10°-20°	1068.3	5.3
20°-30°	1570.0	7.7
30°-40°	1823.5	9.0
40°-50°	1821.2	9.0
50°-60°	1588.0	7.8
60°-70°	1173.9	5.8
70°-80°	664.2	3.3
80°-90°	185.5	0.9
90°-100°	221.3	1.1
100°-110°	703.3	3.5
110°-120°	1203.6	5.9
120°-130°	1582.9	7.8
130°-140°	1776.7	8.8
140°-150°	1742.3	8.6
150°-160°	1461.5	7.2
160°-170°	969.3	4.8
170°-180°	338.8	1.7
0°-30°	3018.1	14.9
0°-40°	4841.6	23.9
0°-60°	8250.9	40.7
0°-90°	10274.4	50.7
90°-120°	2128.2	10.5
90°-150°	7230.1	35.7
90°-180°	10000.0	49.3
0°-180°	20274.0	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	4034	4034	4034	4034	4034	
5°	4034	4019	3976	4007	4000	383
15°	3840	3817	3767	3782	3763	1082
25°	3476	3445	3379	3386	3379	1599
35°	2999	2960	2898	2874	2855	1873
45°	2440	2413	2355	2312	2297	1883
55°	1847	1823	1777	1730	1711	1651
65°	1245	1222	1183	1148	1129	1231
75°	652	644	624	601	609	696
85°	159	155	152	140	136	177
90°	3	39	106	99	102	20
95°	157	188	193	193	188	175
105°	649	658	664	670	670	685
115°	1208	1225	1220	1216	1208	1195
125°	1757	1784	1775	1765	1762	1570
135°	2272	2306	2312	2309	2300	1756
145°	2758	2780	2797	2801	2789	1724
155°	3154	3163	3173	3188	3178	1452
165°	3432	3428	3428	3450	3435	968
175°	3571	3562	3556	3577	3559	339
180°	3577	3577	3577	3577	3577	



TEST NUMBER: P903428

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**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°
0°	4034.3	4034.3	4034.3	4034.3	4034.3
2.5°	4057.6	4038.3	3995.5	4034.3	4026.8
5°	4034.3	4019.0	3976.2	4007.0	3999.7
7.5°	4007.0	3984.0	3941.2	3972.5	3964.7
10°	3964.7	3937.5	3891.0	3921.8	3910.3
12.5°	3906.3	3883.2	3836.7	3856.0	3848.2
15°	3840.4	3817.3	3766.7	3782.3	3763.0
17.5°	3758.9	3735.9	3685.2	3704.6	3685.2
20°	3669.6	3646.5	3592.2	3603.7	3588.5
22.5°	3580.7	3545.7	3495.0	3495.0	3487.2
25°	3475.7	3444.9	3379.0	3386.5	3379.0
27.5°	3359.2	3332.1	3281.8	3270.3	3251.0
30°	3243.2	3211.9	3153.8	3142.3	3126.7
32.5°	3118.9	3095.9	3033.7	3010.2	2994.6
35°	2998.7	2960.1	2897.8	2874.4	2855.1
37.5°	2862.9	2827.9	2765.8	2738.6	2719.2
40°	2723.4	2692.1	2630.0	2595.4	2579.7
42.5°	2587.6	2556.3	2494.5	2455.4	2432.4
45°	2440.2	2413.0	2354.6	2312.2	2296.6
47.5°	2296.6	2269.5	2207.2	2164.5	2141.4
50°	2145.1	2125.8	2071.4	2017.1	1997.8
52.5°	1997.8	1970.6	1920.4	1877.5	1850.4
55°	1846.7	1823.3	1776.8	1730.2	1710.9
57.5°	1695.3	1675.9	1625.3	1578.8	1563.1
60°	1543.8	1528.6	1474.2	1431.4	1419.9
62.5°	1396.5	1369.3	1330.6	1291.9	1276.3
65°	1245.4	1221.9	1183.3	1148.3	1129.0
67.5°	1090.2	1070.5	1035.9	1008.8	993.2
70°	946.6	930.9	896.0	868.8	853.6
72.5°	799.3	783.6	764.3	737.2	725.6
75°	651.5	644.1	624.3	601.3	609.2
77.5°	519.8	504.2	496.3	484.8	473.3
80°	388.1	384.0	376.2	364.7	356.8
82.5°	263.8	263.8	260.1	244.5	244.5
85°	158.9	155.1	151.5	139.5	135.8
87.5°	69.9	62.1	54.3	42.8	38.6
90°	3.2	38.8	105.7	99.2	102.5
92.5°	66.8	90.6	93.8	97.1	97.1
95°	157.4	187.7	193.0	193.0	187.7
97.5°	262.0	290.1	302.0	302.0	302.0
100°	382.9	407.6	416.2	416.2	413.0
102.5°	510.1	528.4	540.3	543.6	540.3
105°	649.2	657.8	664.3	669.7	669.7
107.5°	787.2	800.2	800.2	802.3	787.2
110°	921.0	938.2	938.2	938.2	929.6



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**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°
112.5°	1065.4	1083.8	1080.5	1072.0	1065.4
115°	1207.8	1225.1	1219.6	1216.4	1207.8
117.5°	1349.1	1372.8	1357.7	1349.1	1340.5
120°	1491.5	1515.1	1491.5	1491.5	1481.8
122.5°	1620.9	1651.1	1636.0	1627.3	1620.9
125°	1756.7	1783.7	1775.1	1765.4	1762.1
127.5°	1889.4	1922.8	1910.9	1898.0	1889.4
130°	2013.4	2052.2	2046.8	2040.3	2028.4
132.5°	2152.5	2182.7	2184.8	2169.7	2161.2
135°	2272.2	2305.6	2312.2	2308.9	2300.3
137.5°	2405.9	2432.9	2438.3	2436.1	2423.2
140°	2523.5	2550.4	2565.5	2565.5	2553.6
142.5°	2644.3	2671.3	2679.8	2683.0	2671.3
145°	2758.5	2780.1	2797.4	2800.7	2788.8
147.5°	2861.0	2887.9	2901.0	2906.3	2894.5
150°	2966.7	2985.0	2996.9	3006.6	2996.9
152.5°	3060.5	3078.8	3094.0	3105.9	3094.0
155°	3154.3	3163.0	3172.7	3187.8	3178.1
157.5°	3235.3	3241.7	3247.1	3268.6	3253.6
160°	3307.5	3314.0	3317.2	3335.6	3322.6
162.5°	3374.3	3374.3	3377.6	3398.1	3383.0
165°	3431.5	3428.3	3428.3	3449.8	3434.7
167.5°	3483.3	3473.6	3473.6	3495.1	3480.1
170°	3522.1	3513.4	3510.2	3531.8	3513.4
172.5°	3549.0	3540.4	3537.2	3558.8	3540.4
175°	3570.6	3562.0	3555.6	3577.0	3558.8
177.5°	3582.5	3573.8	3567.3	3585.7	3567.3
180°	3577.0	3577.0	3577.0	3577.0	3577.0



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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	11.09	11.96	12.04	12.93	14.19	10.65	11.52	11.60	12.49	13.75
	3H	12.76	13.53	13.72	14.51	15.79	12.27	13.05	13.23	14.03	15.31
	4H	13.35	14.08	14.32	15.06	16.36	12.86	13.60	13.84	14.58	15.87
	6H	13.75	14.43	14.74	15.41	16.72	13.26	13.94	14.24	14.92	16.23
	8H	13.85	14.50	14.85	15.50	16.81	13.36	14.01	14.36	15.01	16.31
	12H	13.90	14.52	14.90	15.52	16.84	13.40	14.02	14.40	15.02	16.34
4H	2H	11.55	12.29	12.54	13.27	14.56	11.20	11.94	12.19	12.92	14.21
	3H	13.42	14.04	14.42	15.05	16.36	13.02	13.64	14.01	14.65	15.95
	4H	14.14	14.70	15.14	15.71	17.04	13.72	14.29	14.72	15.29	16.62
	6H	14.66	15.14	15.67	16.17	17.50	14.24	14.72	15.25	15.75	17.07
	8H	14.81	15.26	15.82	16.28	17.62	14.38	14.83	15.40	15.85	17.20
	12H	14.89	15.29	15.92	16.33	17.68	14.45	14.85	15.48	15.89	17.24
8H	4H	14.34	14.79	15.35	15.81	17.15	13.97	14.42	14.98	15.44	16.78
	6H	14.97	15.35	16.01	16.41	17.75	14.60	14.97	15.63	16.03	17.37
	8H	15.20	15.53	16.24	16.57	17.93	14.81	15.14	15.86	16.19	17.55
	12H	15.33	15.62	16.38	16.66	18.06	14.93	15.22	15.98	16.26	17.66
12H	4H	14.32	14.73	15.36	15.77	17.12	13.96	14.37	14.99	15.41	16.75
	6H	15.00	15.33	16.05	16.38	17.74	14.64	14.97	15.68	16.02	17.37
	8H	15.25	15.54	16.30	16.58	17.98	14.88	15.17	15.93	16.21	17.61