

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: P903366

Luminaire Tested: DFN2DIP-PN4F0-100D050US830-RLLFLL

Issue Date: 11/21/2024

**Test Information**

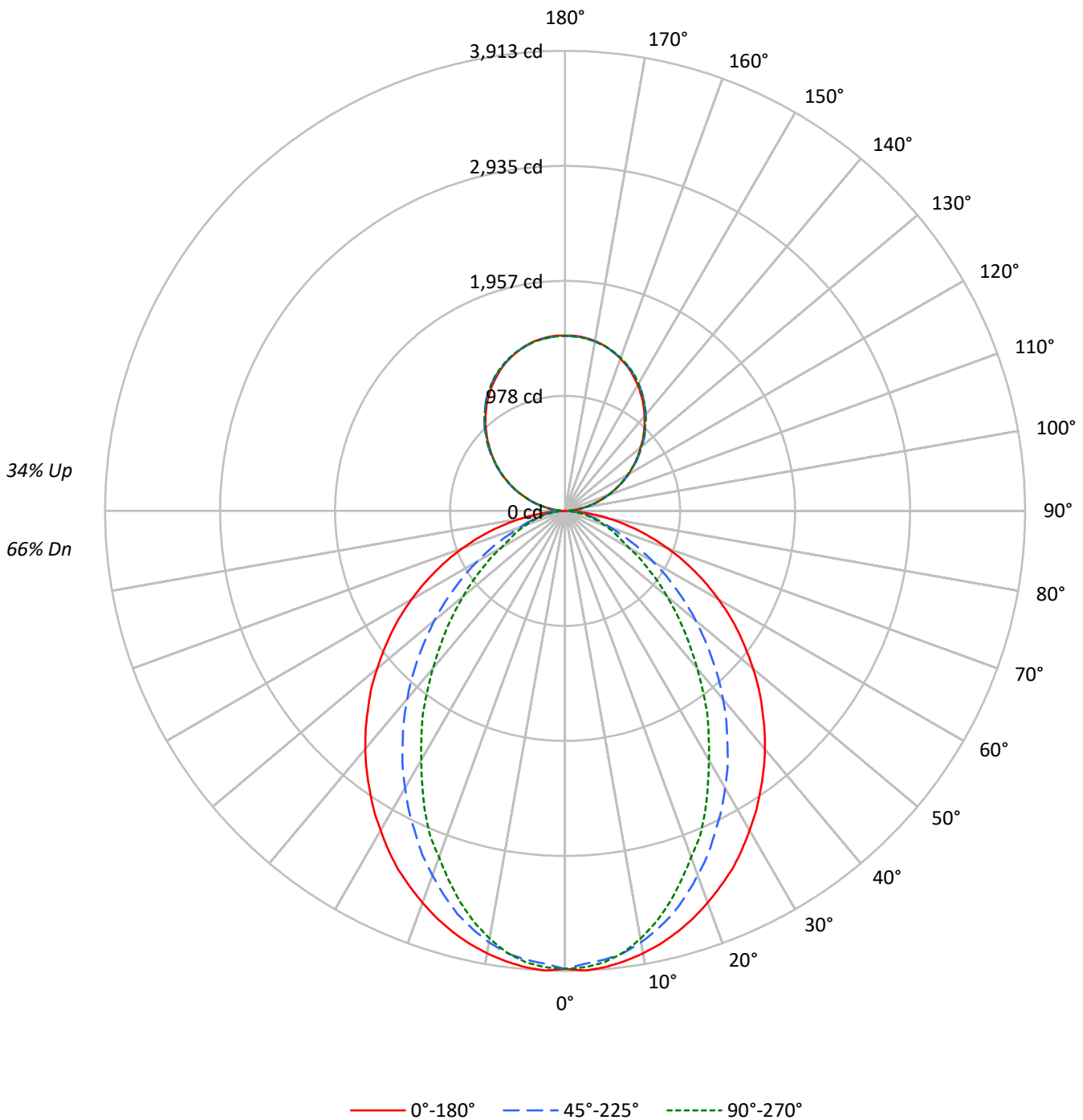
Test Method: LM-79-2019  
Report Number: P903366  
REPORT IS A COMBINATION OF REPORTS P899640 AND P896497  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-PN4F0-100D050US830-RLLFLL  
Description: 4 foot, Pentagon Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 12182.3 lumens  
Efficiency: N/A  
Efficacy: 87.9 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): 138.6  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9952  
Total Harmonic Distortion (THDi): 0.069  
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°	2844	2844	2844
5°	2848	2799	2817
10°	2820	2744	2726
15°	2781	2654	2584
20°	2730	2529	2411
25°	2677	2389	2244
30°	2606	2246	2031
35°	2537	2092	1844
40°	2467	1932	1630
45°	2385	1755	1436
50°	2301	1576	1246
55°	2212	1385	1063
60°	2110	1185	876
65°	1992	982	789
70°	1850	792	715
75°	1671	699	651
80°	1411	588	567
85°	983	394	429

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 2385 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	365.1	3.0
10°-20°	1002.2	8.2
20°-30°	1407.1	11.6
30°-40°	1533.9	12.6
40°-50°	1409.8	11.6
50°-60°	1107.2	9.1
60°-70°	720.7	5.9
70°-80°	371.0	3.0
80°-90°	98.9	0.8
90°-100°	92.2	0.8
100°-110°	293.0	2.4
110°-120°	501.5	4.1
120°-130°	659.5	5.4
130°-140°	740.3	6.1
140°-150°	725.9	6.0
150°-160°	609.0	5.0
160°-170°	403.9	3.3
170°-180°	141.2	1.2
0°-30°	2774.5	22.8
0°-40°	4308.3	35.4
0°-60°	6825.3	56.0
0°-90°	8015.8	65.8
90°-120°	886.7	7.3
90°-150°	3012.5	24.7
90°-180°	4167.0	34.2
0°-180°	12182.3	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	3896	3896	3896	3896	3896	
5°	3896	3878	3832	3864	3853	369
15°	3705	3666	3546	3480	3444	1044
25°	3363	3250	3018	2873	2820	1547
35°	2898	2718	2408	2186	2108	1814
45°	2369	2133	1763	1512	1428	1830
55°	1801	1526	1146	934	867	1610
65°	1216	931	613	494	483	1206
75°	649	402	282	257	254	686
85°	152	77	67	67	67	174
90°	1	16	44	41	43	12
95°	66	78	80	80	78	73
105°	270	274	277	279	279	285
115°	503	510	508	507	503	498
125°	732	743	740	736	734	654
135°	947	961	963	962	958	732
145°	1149	1158	1166	1167	1162	718
155°	1314	1318	1322	1328	1324	605
165°	1430	1428	1428	1438	1431	403
175°	1488	1484	1482	1490	1483	141
180°	1490	1490	1490	1490	1490	



TEST NUMBER: P903366

CATALOG NUMBER: DFN2DIP-PN4F0-100D050US830-RLFL

**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°
0°	3895.5	3895.5	3895.5	3895.5	3895.5
2.5°	3913.1	3895.5	3856.6	3892.1	3885.1
5°	3895.5	3877.9	3831.9	3863.8	3853.2
7.5°	3863.8	3842.7	3793.4	3807.2	3789.7
10°	3821.4	3796.7	3726.4	3715.6	3694.7
12.5°	3768.8	3736.9	3641.5	3620.6	3581.7
15°	3705.1	3666.2	3546.5	3479.6	3444.4
17.5°	3631.0	3574.6	3426.5	3349.0	3292.6
20°	3546.5	3475.8	3299.7	3211.8	3134.0
22.5°	3454.9	3373.7	3169.1	3049.5	2996.7
25°	3363.3	3250.4	3017.6	2873.2	2820.2
27.5°	3254.0	3134.0	2876.6	2710.9	2629.8
30°	3137.7	3003.4	2721.4	2541.9	2446.6
32.5°	3024.8	2862.4	2573.7	2362.0	2273.7
35°	2897.9	2718.1	2408.0	2185.8	2108.0
37.5°	2774.6	2580.4	2252.8	2009.3	1921.4
40°	2644.0	2432.7	2090.5	1840.2	1748.6
42.5°	2510.1	2284.5	1928.5	1667.5	1579.5
45°	2369.1	2132.7	1762.8	1512.2	1427.7
47.5°	2235.2	1985.0	1604.2	1353.6	1276.2
50°	2087.1	1836.8	1449.0	1205.5	1131.8
52.5°	1942.3	1677.9	1300.9	1068.2	1001.3
55°	1801.3	1526.4	1145.7	934.3	867.3
57.5°	1657.0	1374.9	1008.4	810.9	754.4
60°	1508.8	1226.8	863.7	684.1	627.6
62.5°	1364.4	1082.4	740.2	571.2	543.1
65°	1216.4	930.6	613.4	493.7	482.9
67.5°	1075.3	789.6	493.7	433.5	423.0
70°	927.2	652.3	408.8	373.6	359.5
72.5°	786.2	525.1	341.9	313.8	306.7
75°	648.6	401.7	282.0	257.3	253.9
77.5°	511.3	285.4	222.2	207.9	200.9
80°	384.1	204.6	169.1	155.2	155.2
82.5°	267.8	137.6	116.3	109.2	109.2
85°	151.5	77.4	66.9	66.9	66.9
87.5°	56.5	28.1	28.1	24.7	24.7
90°	1.3	16.2	44.0	41.4	42.7
92.5°	27.9	37.7	39.1	40.4	40.4
95°	65.6	78.2	80.4	80.4	78.2
97.5°	109.1	120.8	125.8	125.8	125.8
100°	159.5	169.8	173.4	173.4	172.1
102.5°	212.5	220.2	225.1	226.5	225.1
105°	270.5	274.1	276.8	279.0	279.0
107.5°	328.0	333.4	333.4	334.3	328.0
110°	383.7	391.0	391.0	391.0	387.3



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**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°
112.5°	443.9	451.6	450.3	446.7	443.9
115°	503.2	510.5	508.2	506.9	503.2
117.5°	562.1	572.0	565.7	562.1	558.6
120°	621.4	631.3	621.4	621.4	617.4
122.5°	675.3	688.0	681.6	678.1	675.3
125°	732.0	743.2	739.6	735.6	734.2
127.5°	787.2	801.2	796.3	790.8	787.2
130°	839.0	855.1	852.8	850.2	845.2
132.5°	896.9	909.5	910.4	904.1	900.5
135°	946.8	960.6	963.4	962.1	958.5
137.5°	1002.5	1013.7	1016.0	1015.0	1009.7
140°	1051.4	1062.7	1068.9	1068.9	1064.0
142.5°	1101.7	1113.0	1116.6	1117.9	1113.0
145°	1149.4	1158.4	1165.5	1167.0	1162.0
147.5°	1192.1	1203.3	1208.7	1211.0	1206.0
150°	1236.1	1243.8	1248.7	1252.7	1248.7
152.5°	1275.3	1282.9	1289.1	1294.1	1289.1
155°	1314.3	1317.9	1321.9	1328.2	1324.2
157.5°	1348.0	1350.7	1352.9	1362.0	1355.7
160°	1378.1	1380.8	1382.1	1389.8	1384.4
162.5°	1406.0	1406.0	1407.3	1415.9	1409.6
165°	1429.8	1428.4	1428.4	1437.5	1431.2
167.5°	1451.3	1447.3	1447.3	1456.3	1450.0
170°	1467.5	1464.0	1462.6	1471.6	1464.0
172.5°	1478.8	1475.2	1473.9	1482.8	1475.2
175°	1487.8	1484.1	1481.5	1490.4	1482.8
177.5°	1492.7	1489.1	1486.4	1494.0	1486.4
180°	1490.4	1490.4	1490.4	1490.4	1490.4



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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	12.14	13.12	12.96	13.96	14.99	8.11	9.09	8.93	9.92	10.95
	3H	13.84	14.71	14.67	15.55	16.61	9.31	10.19	10.14	11.03	12.09
	4H	14.45	15.28	15.30	16.13	17.20	9.77	10.59	10.61	11.44	12.51
	6H	14.89	15.65	15.74	16.50	17.58	10.10	10.86	10.96	11.72	12.80
	8H	15.02	15.74	15.88	16.62	17.70	10.19	10.92	11.06	11.79	12.87
	12H	15.09	15.77	15.96	16.64	17.75	10.24	10.93	11.11	11.80	12.91
4H	2H	12.18	13.01	13.03	13.86	14.93	8.73	9.55	9.58	10.40	11.47
	3H	14.03	14.71	14.89	15.60	16.68	10.09	10.77	10.95	11.66	12.74
	4H	14.73	15.35	15.60	16.23	17.34	10.64	11.27	11.52	12.15	13.26
	6H	15.25	15.79	16.14	16.69	17.81	11.07	11.61	11.96	12.51	13.63
	8H	15.43	15.93	16.32	16.83	17.96	11.20	11.71	12.10	12.60	13.73
	12H	15.54	15.99	16.45	16.91	18.04	11.28	11.73	12.19	12.65	13.78
8H	4H	14.71	15.21	15.60	16.11	17.23	10.94	11.44	11.83	12.34	13.46
	6H	15.28	15.69	16.20	16.64	17.76	11.46	11.88	12.38	12.82	13.94
	8H	15.50	15.87	16.43	16.80	17.94	11.65	12.02	12.58	12.95	14.10
	12H	15.65	15.97	16.58	16.90	18.09	11.78	12.10	12.71	13.03	14.22
12H	4H	14.66	15.12	15.58	16.03	17.17	10.95	11.40	11.86	12.32	13.45
	6H	15.26	15.62	16.19	16.56	17.70	11.51	11.88	12.44	12.81	13.96
	8H	15.49	15.81	16.42	16.73	17.93	11.73	12.05	12.66	12.98	14.17