

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: P917044

Luminaire Tested: DFN2DIP-PN4F0-110D060US930-FLLFLL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P917044
REPORT IS A COMBINATION OF REPORTS P899659 AND P896497
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-PN4F0-110D060US930-FLLFLL
Description: 4 foot, Pentagon Define Geo, with Direct Frosted Lens, Indirect Frosted Lens
Light Source: -
Ballast/Driver: -

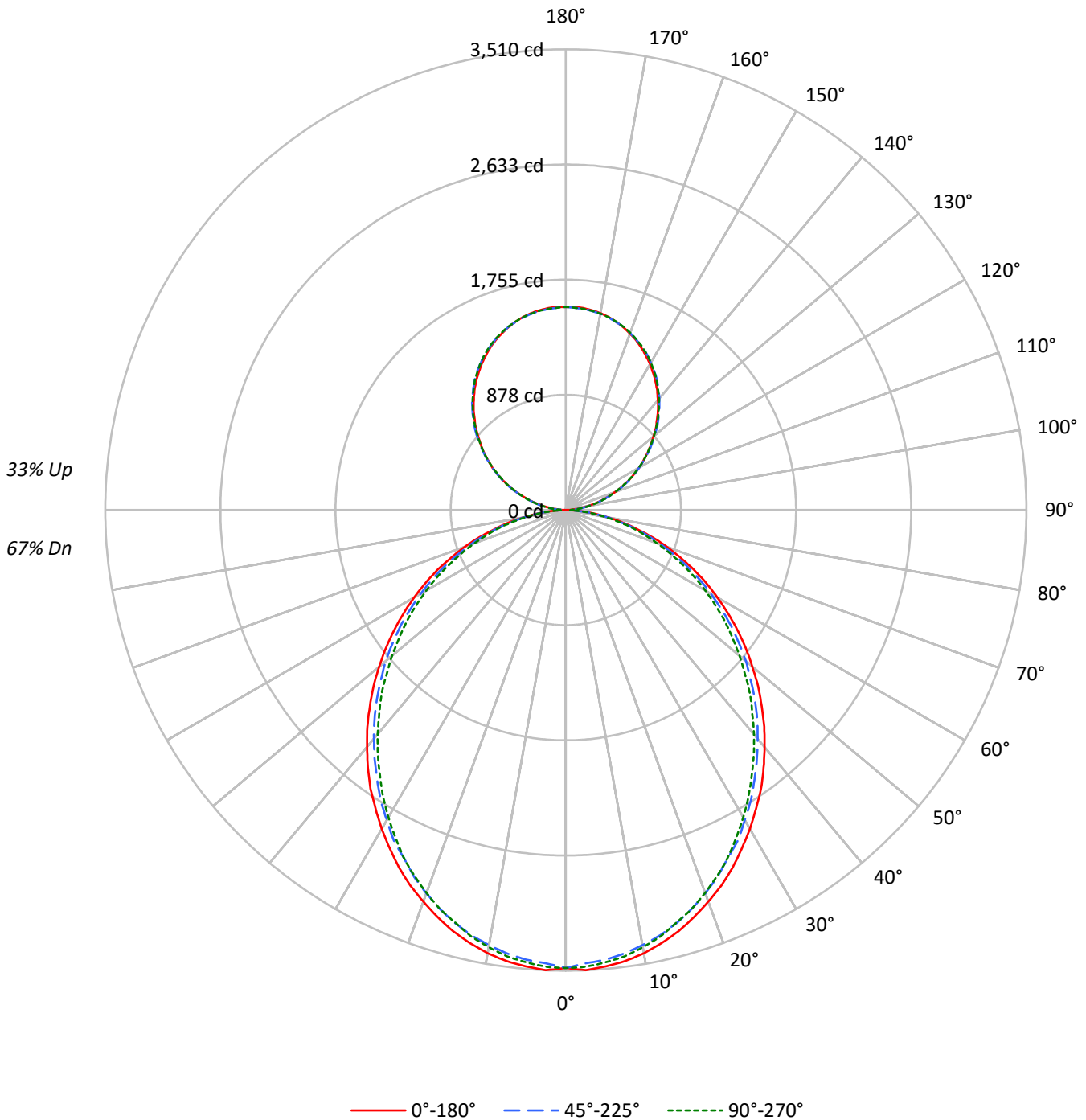
Summary

Lumens per Lamp: N/A
Luminaire Lumens: 13207.8 lumens
Efficiency: N/A
Efficacy: 82.9 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: Semi-Direct

Input Watts (W): 159.4
Input Voltage (V):
Input Current (A_{in}): 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

TEST NUMBER: P917044
CATALOG NUMBER: DFN2DIP-PN4F0-110D060US930-FLLFLL

Luminous Intensity Polar Plot





TEST NUMBER: P917044

CATALOG NUMBER: DFN2DIP-PN4F0-110D060US930-FLLFLL

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	105	105	105	105	93	93	93	82	82	82	72	72	72	67				67
1	102	97	93	90	96	92	88	85	82	79	76	72	70	68	64	62	61	57				57
2	93	85	79	73	87	80	75	70	72	67	63	63	60	57	56	54	51	47				47
3	85	75	67	61	79	71	64	58	63	58	53	56	52	48	50	46	44	40				40
4	77	66	58	52	73	63	55	50	56	50	46	50	45	42	44	41	38	35				35
5	71	59	51	45	67	56	49	43	50	44	39	45	40	36	40	36	33	30				30
6	66	53	45	39	62	51	43	37	45	39	35	41	36	32	36	32	29	26				26
7	61	48	40	34	57	46	38	33	41	35	31	37	32	28	33	29	26	23				23
8	56	44	36	30	53	42	34	29	38	32	27	34	29	25	31	26	23	21				21
9	53	40	32	27	50	38	31	26	35	29	24	31	26	23	28	24	21	19				19
10	49	37	29	24	46	35	28	24	32	26	22	29	24	21	26	22	19	17				17

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: 0°
 Vertical Angle: 45°
 Luminance: 2125 cd/sqm



TEST NUMBER: P917044

CATALOG NUMBER: DFN2DIP-PN4F0-110D060US930-FLLFLL

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	328.4	2.5
10°-20°	924.1	7.0
20°-30°	1358.1	10.3
30°-40°	1577.3	11.9
40°-50°	1575.4	11.9
50°-60°	1373.7	10.4
60°-70°	1015.5	7.7
70°-80°	574.5	4.3
80°-90°	156.0	1.2
90°-100°	95.7	0.7
100°-110°	304.2	2.3
110°-120°	520.6	3.9
120°-130°	684.6	5.2
130°-140°	768.4	5.8
140°-150°	753.5	5.7
150°-160°	632.1	4.8
160°-170°	419.2	3.2
170°-180°	146.5	1.1
0°-30°	2610.6	19.8
0°-40°	4187.9	31.7
0°-60°	7137.0	54.0
0°-90°	8883.0	67.3
90°-120°	920.5	7.0
90°-150°	3127.0	23.7
90°-180°	4325.0	32.7
0°-180°	13207.8	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°	1	17	46	43	44	13
95°	68	81	84	84	81	76
105°	281	284	287	290	290	296
115°	522	530	528	526	522	517
125°	760	771	768	764	762	679
135°	983	997	1000	999	995	760
145°	1193	1202	1210	1211	1206	745
155°	1364	1368	1372	1379	1374	628
165°	1484	1483	1483	1492	1486	419
175°	1544	1541	1538	1547	1539	147
180°	1547	1547	1547	1547	1547	



TEST NUMBER: P917044

CATALOG NUMBER: DFN2DIP-PN4F0-110D060US930-FLLFLL

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°	1.4	16.8	45.7	42.9	44.3
92.5°	28.9	39.2	40.6	42.0	42.0
95°	68.1	81.1	83.5	83.5	81.1
97.5°	113.3	125.5	130.6	130.6	130.6
100°	165.6	176.3	180.0	180.0	178.6
102.5°	220.6	228.5	233.7	235.1	233.7
105°	280.8	284.5	287.3	289.7	289.7
107.5°	340.5	346.1	346.1	347.0	340.5
110°	398.4	405.8	405.8	405.8	402.0



TEST NUMBER: P917044

CATALOG NUMBER: DFN2DIP-PN4F0-110D060US930-FLLFLL

CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	460.8	468.7	467.3	463.6	460.8
115°	522.4	529.9	527.5	526.1	522.4
117.5°	583.5	593.8	587.2	583.5	579.8
120°	645.1	655.3	645.1	645.1	640.8
122.5°	701.0	714.0	707.5	703.8	701.0
125°	759.8	771.4	767.7	763.5	762.1
127.5°	817.2	831.6	826.5	820.9	817.2
130°	870.8	887.6	885.3	882.5	877.3
132.5°	931.0	944.0	944.9	938.4	934.7
135°	982.8	997.2	1000.0	998.6	994.8
137.5°	1040.6	1052.2	1054.6	1053.6	1048.1
140°	1091.4	1103.1	1109.6	1109.6	1104.5
142.5°	1143.6	1155.3	1159.0	1160.4	1155.3
145°	1193.1	1202.4	1209.9	1211.3	1206.2
147.5°	1237.4	1249.0	1254.7	1256.9	1251.8
150°	1283.1	1291.0	1296.2	1300.3	1296.2
152.5°	1323.6	1331.6	1338.1	1343.3	1338.1
155°	1364.2	1368.0	1372.1	1378.8	1374.5
157.5°	1399.2	1402.1	1404.4	1413.7	1407.2
160°	1430.5	1433.3	1434.7	1442.6	1437.0
162.5°	1459.4	1459.4	1460.8	1469.7	1463.1
165°	1484.1	1482.7	1482.7	1492.1	1485.6
167.5°	1506.5	1502.4	1502.4	1511.6	1505.1
170°	1523.3	1519.6	1518.2	1527.5	1519.6
172.5°	1535.0	1531.2	1529.8	1539.1	1531.2
175°	1544.3	1540.6	1537.7	1547.1	1539.1
177.5°	1549.4	1545.7	1542.9	1550.8	1542.9
180°	1547.1	1547.1	1547.1	1547.1	1547.1



TEST NUMBER: P917044
 CATALOG NUMBER: DFN2DIP-PN4F0-110D060US930-FLLFLL

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	11.98	13.03	12.78	13.84	14.84	11.54	12.58	12.34	13.40	14.40
	3H	13.66	14.60	14.47	15.42	16.45	13.18	14.11	13.98	14.94	15.97
	4H	14.26	15.14	15.08	15.97	17.02	13.77	14.65	14.59	15.49	16.53
	6H	14.67	15.48	15.51	16.33	17.38	14.18	14.99	15.01	15.83	16.89
	8H	14.78	15.56	15.63	16.42	17.47	14.29	15.06	15.13	15.92	16.98
	12H	14.84	15.58	15.69	16.43	17.51	14.34	15.08	15.19	15.93	17.01
4H	2H	12.47	13.35	13.29	14.18	15.23	12.12	13.00	12.94	13.83	14.87
	3H	14.35	15.09	15.19	15.96	17.01	13.95	14.69	14.79	15.55	16.61
	4H	15.08	15.75	15.93	16.61	17.70	14.66	15.33	15.51	16.19	17.28
	6H	15.60	16.19	16.47	17.07	18.16	15.18	15.76	16.05	16.65	17.74
	8H	15.76	16.30	16.63	17.19	18.29	15.33	15.87	16.20	16.76	17.86
	12H	15.84	16.33	16.73	17.24	18.34	15.40	15.89	16.29	16.80	17.90
8H	4H	15.29	15.83	16.16	16.71	17.82	14.92	15.46	15.79	16.34	17.44
	6H	15.93	16.38	16.83	17.30	18.41	15.55	16.00	16.45	16.93	18.03
	8H	16.15	16.55	17.06	17.47	18.59	15.77	16.17	16.68	17.09	18.21
	12H	16.30	16.65	17.21	17.56	18.73	15.89	16.25	16.81	17.16	18.33
12H	4H	15.28	15.77	16.17	16.67	17.78	14.92	15.41	15.81	16.31	17.42
	6H	15.96	16.36	16.87	17.28	18.40	15.60	16.00	16.51	16.91	18.03
	8H	16.21	16.57	17.13	17.48	18.65	15.84	16.19	16.75	17.10	18.27