

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: P928750

Luminaire Tested: DFN2DIP-HX4F0-110D050US930-RLLONL

Issue Date: 12/12/2024

**Test Information**

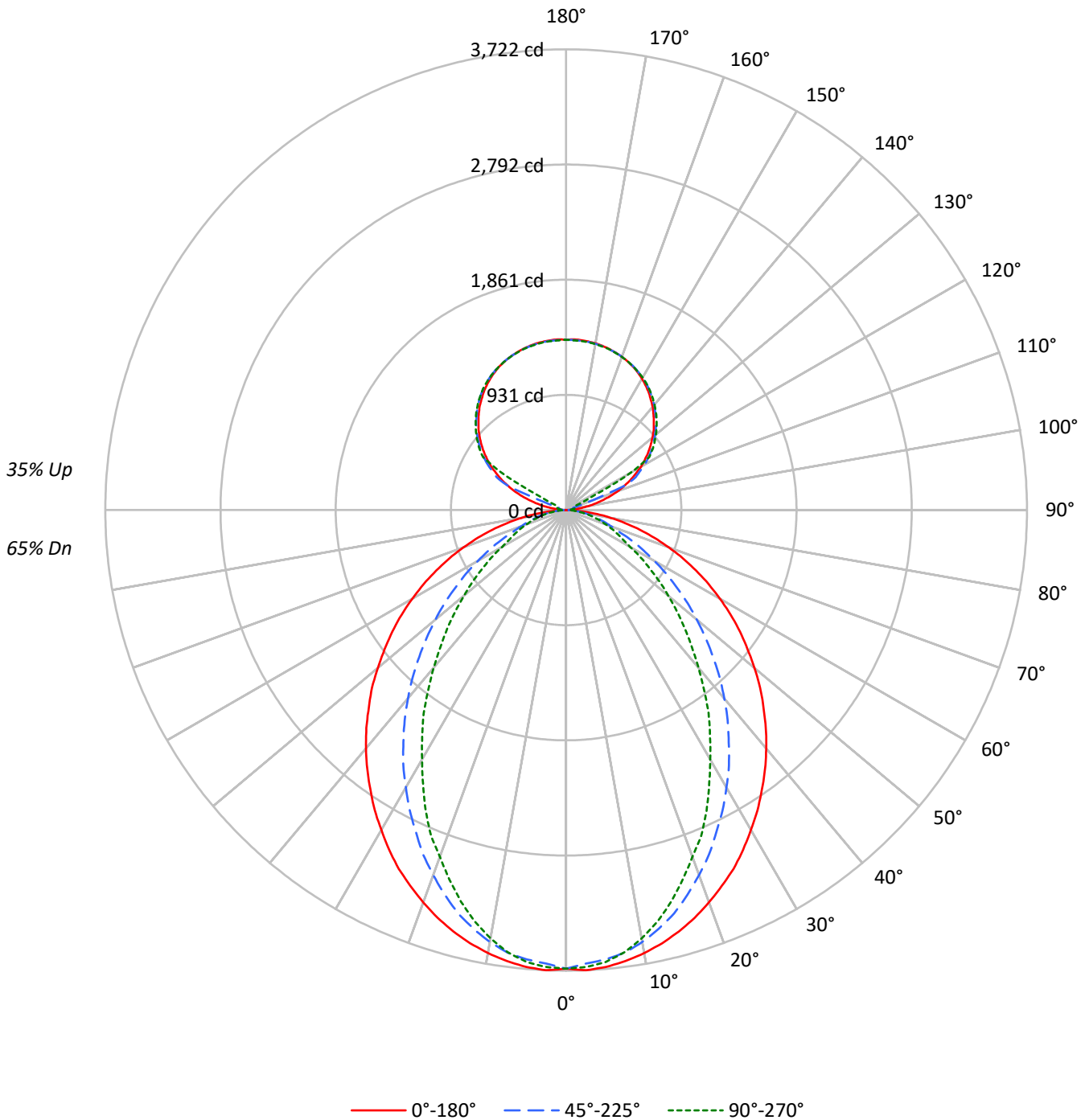
Test Method: LM-79-2019  
Report Number: P928750  
REPORT IS A COMBINATION OF REPORTS P900852 AND P896187  
Test Lab: INNOVATION CENTER  
Issue Date: 12/12/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-HX4F0-110D050US930-RLONL  
Description: 4 foot, Hexagon Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 11654.5 lumens  
Efficiency: N/A  
Efficacy: 77.7 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 3.54' x L: 4.09' x H: 0.1')  
CIE Type: Semi-Direct  
  
Input Watts (W): 149.9  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9967  
Total Harmonic Distortion (THDi): 0.063  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT

TEST NUMBER: P928750  
CATALOG NUMBER: DFN2DIP-HX4F0-110D050US930-RLLONL

### Luminous Intensity Polar Plot





TEST NUMBER: P928750

CATALOG NUMBER: DFN2DIP-HX4F0-110D050US930-RLLONL

**COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:**

RF	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	70	70	70	65			
1	102	98	94	91	96	92	89	86	82	79	77	72	70	69	63	62	61	56			
2	93	86	80	75	88	81	76	72	72	68	65	64	61	58	56	54	52	48			
3	86	76	69	63	80	72	66	61	64	59	55	57	53	50	50	48	45	42			
4	79	68	60	54	74	64	57	52	58	52	48	51	47	43	46	42	39	36			
5	72	61	53	47	68	58	51	45	52	46	42	46	42	38	41	38	35	32			
6	67	55	47	41	63	52	45	40	47	41	37	42	37	34	38	34	31	28			
7	62	50	42	37	59	48	40	35	43	37	33	39	34	30	35	31	28	25			
8	58	46	38	33	55	44	36	32	39	34	29	36	31	27	32	28	25	23			
9	54	42	34	29	51	40	33	28	36	31	27	33	28	25	30	26	23	21			
10	51	39	31	27	48	37	30	26	34	28	24	31	26	23	28	24	21	19			

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

	0°	45°	90°
0°	2755	2755	2755
5°	2760	2712	2729
10°	2733	2659	2640
15°	2695	2571	2503
20°	2646	2450	2335
25°	2595	2315	2172
30°	2527	2176	1966
35°	2460	2026	1785
40°	2392	1872	1577
45°	2313	1700	1389
50°	2231	1526	1205
55°	2146	1341	1028
60°	2047	1147	846
65°	1934	951	762
70°	1797	767	690
75°	1624	676	628
80°	1374	568	545
85°	961	381	411

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 2313 cd/sqm



TEST NUMBER: P928750

CATALOG NUMBER: DFN2DIP-HX4F0-110D050US930-RLLONL

**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	347.3	3.0
10°-20°	953.3	8.2
20°-30°	1338.4	11.5
30°-40°	1458.9	12.5
40°-50°	1340.9	11.5
50°-60°	1053.1	9.0
60°-70°	685.5	5.9
70°-80°	352.9	3.0
80°-90°	92.5	0.8
90°-100°	45.4	0.4
100°-110°	169.1	1.5
110°-120°	448.4	3.8
120°-130°	743.6	6.4
130°-140°	789.9	6.8
140°-150°	734.1	6.3
150°-160°	590.2	5.1
160°-170°	380.3	3.3
170°-180°	130.9	1.1
0°-30°	2638.9	22.6
0°-40°	4097.9	35.2
0°-60°	6491.9	55.7
0°-90°	7622.7	65.4
90°-120°	662.8	5.7
90°-150°	2930.4	25.1
90°-180°	4032.0	34.6
0°-180°	11654.5	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	3705	3705	3705	3705	3705	
5°	3705	3688	3645	3675	3665	351
15°	3524	3487	3373	3310	3276	993
25°	3199	3092	2870	2733	2682	1471
35°	2756	2585	2290	2079	2005	1725
45°	2253	2028	1677	1438	1358	1740
55°	1713	1452	1090	889	825	1531
65°	1157	885	584	470	459	1147
75°	617	382	268	245	242	652
85°	144	74	64	64	64	165
90°	1	12	20	25	27	11
95°	65	32	39	44	43	77
105°	302	332	61	72	76	323
115°	572	589	614	153	82	563
125°	809	822	841	848	851	721
135°	1001	1017	1026	1036	1034	773
145°	1161	1160	1177	1184	1179	726
155°	1279	1270	1282	1288	1280	589
165°	1347	1342	1344	1351	1344	381
175°	1378	1371	1373	1380	1370	131
180°	1375	1375	1375	1375	1375	



TEST NUMBER: P928750

CATALOG NUMBER: DFN2DIP-HX4F0-110D050US930-RLONL

**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°
0°	3705.2	3705.2	3705.2	3705.2	3705.2
2.5°	3721.9	3705.2	3668.2	3702.1	3695.3
5°	3705.2	3688.5	3644.8	3675.0	3665.1
7.5°	3675.0	3655.0	3608.1	3621.3	3604.5
10°	3634.8	3611.3	3544.4	3534.1	3514.2
12.5°	3584.6	3554.4	3463.7	3443.7	3406.7
15°	3524.1	3487.1	3373.3	3309.6	3276.1
17.5°	3453.7	3400.0	3259.1	3185.4	3131.7
20°	3373.3	3306.0	3138.5	3054.9	2980.9
22.5°	3286.2	3208.9	3014.4	2900.5	2850.3
25°	3199.0	3091.5	2870.3	2732.9	2682.4
27.5°	3095.1	2980.9	2736.1	2578.5	2501.3
30°	2984.4	2856.7	2588.5	2417.7	2327.0
32.5°	2877.0	2722.6	2447.9	2246.6	2162.7
35°	2756.4	2585.3	2290.4	2079.1	2005.1
37.5°	2639.1	2454.4	2142.7	1911.1	1827.6
40°	2514.8	2313.9	1988.4	1750.3	1663.2
42.5°	2387.5	2173.0	1834.3	1586.0	1502.4
45°	2253.4	2028.5	1676.7	1438.3	1358.0
47.5°	2126.0	1888.0	1525.8	1287.5	1213.9
50°	1985.1	1747.1	1378.2	1146.6	1076.5
52.5°	1847.4	1595.9	1237.3	1016.1	952.3
55°	1713.3	1451.8	1089.7	888.7	825.0
57.5°	1576.0	1307.7	959.1	771.3	717.5
60°	1435.1	1166.9	821.4	650.7	597.0
62.5°	1297.8	1029.6	704.1	543.3	516.5
65°	1156.9	885.1	583.5	469.6	459.3
67.5°	1022.8	751.0	469.6	412.3	402.4
70°	881.9	620.5	388.8	355.4	341.9
72.5°	747.8	499.5	325.2	298.5	291.7
75°	616.9	382.1	268.2	244.7	241.6
77.5°	486.3	271.5	211.3	197.8	191.0
80°	365.4	194.6	160.8	147.7	147.7
82.5°	254.7	130.9	110.7	103.9	103.9
85°	144.1	73.7	63.7	63.7	63.7
87.5°	53.7	26.7	26.7	23.5	23.5
90°	1.0	11.9	19.9	24.9	26.8
92.5°	24.9	20.9	23.9	25.9	26.8
95°	64.6	31.8	38.8	43.8	42.8
97.5°	116.4	34.9	50.7	53.8	54.7
100°	176.2	39.9	56.7	64.6	66.7
102.5°	241.8	239.9	58.8	69.6	72.7
105°	302.5	332.4	60.7	71.6	75.6
107.5°	373.2	398.0	62.8	73.6	77.7
110°	440.9	461.7	174.2	74.7	78.6



TEST NUMBER: P928750

CATALOG NUMBER: DFN2DIP-HX4F0-110D050US930-RLONL

**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°
112.5°	504.6	522.4	505.5	76.6	79.6
115°	572.2	589.1	614.0	153.3	81.7
117.5°	630.9	650.8	667.8	525.3	264.7
120°	696.6	711.5	729.4	741.4	607.0
122.5°	752.2	768.2	788.2	794.1	795.2
125°	809.0	822.0	840.9	847.8	850.9
127.5°	860.7	874.7	889.7	899.6	900.6
130°	909.5	925.5	936.4	947.4	946.5
132.5°	959.3	972.3	983.1	992.2	991.2
135°	1001.1	1017.1	1025.9	1036.0	1034.0
137.5°	1044.8	1056.8	1066.8	1076.8	1073.8
140°	1087.6	1095.7	1106.5	1115.5	1110.6
142.5°	1123.6	1130.6	1143.4	1151.4	1146.4
145°	1161.4	1160.3	1177.2	1184.2	1179.2
147.5°	1194.1	1191.1	1208.1	1213.0	1209.1
150°	1226.0	1219.1	1235.0	1240.9	1235.9
152.5°	1252.8	1244.9	1259.8	1265.9	1258.8
155°	1278.7	1269.9	1281.8	1287.7	1279.8
157.5°	1299.6	1291.7	1300.7	1307.7	1299.6
160°	1317.6	1311.6	1317.6	1323.5	1316.6
162.5°	1333.4	1327.6	1332.4	1339.5	1330.5
165°	1347.4	1341.5	1344.4	1351.4	1344.4
167.5°	1358.4	1352.3	1355.4	1362.4	1353.4
170°	1367.3	1361.3	1363.3	1370.3	1361.3
172.5°	1373.3	1367.3	1369.4	1376.3	1367.3
175°	1378.2	1371.2	1373.3	1380.2	1370.3
177.5°	1380.2	1373.3	1374.3	1381.3	1372.3
180°	1375.2	1375.2	1375.2	1375.2	1375.2



TEST NUMBER: P928750  
 CATALOG NUMBER: DFN2DIP-HX4F0-110D050US930-RLONL

**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	12.00	12.97	12.82	13.81	14.85	7.97	8.95	8.79	9.78	10.82
	3H	13.69	14.56	14.52	15.41	16.47	9.17	10.04	10.01	10.89	11.96
	4H	14.30	15.13	15.15	15.98	17.05	9.63	10.45	10.48	11.31	12.38
	6H	14.73	15.49	15.60	16.35	17.44	9.96	10.72	10.82	11.58	12.67
	8H	14.86	15.58	15.73	16.46	17.55	10.06	10.78	10.93	11.66	12.74
	12H	14.93	15.62	15.81	16.49	17.60	10.11	10.79	10.98	11.66	12.78
4H	2H	12.03	12.86	12.89	13.71	14.79	8.59	9.41	9.44	10.26	11.34
	3H	13.88	14.56	14.74	15.45	16.54	9.95	10.63	10.82	11.52	12.61
	4H	14.58	15.20	15.45	16.08	17.20	10.51	11.13	11.38	12.01	13.13
	6H	15.10	15.64	15.99	16.54	17.66	10.93	11.47	11.83	12.38	13.50
	8H	15.28	15.78	16.17	16.68	17.81	11.07	11.57	11.96	12.47	13.60
	12H	15.38	15.83	16.30	16.75	17.89	11.14	11.59	12.05	12.51	13.65
8H	4H	14.56	15.05	15.45	15.96	17.09	10.80	11.30	11.69	12.20	13.33
	6H	15.13	15.54	16.05	16.48	17.62	11.32	11.73	12.24	12.68	13.81
	8H	15.35	15.71	16.28	16.65	17.80	11.52	11.88	12.45	12.82	13.97
	12H	15.49	15.81	16.43	16.74	17.94	11.64	11.96	12.58	12.89	14.09
12H	4H	14.51	14.96	15.43	15.88	17.02	10.81	11.26	11.72	12.18	13.32
	6H	15.10	15.47	16.04	16.41	17.56	11.37	11.74	12.30	12.67	13.82
	8H	15.33	15.65	16.27	16.58	17.78	11.59	11.91	12.53	12.84	14.04