

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: P928630

Luminaire Tested: DFN2DIP-HX4F0-070D110US930-RLLONL

Issue Date: 12/12/2024

**Test Information**

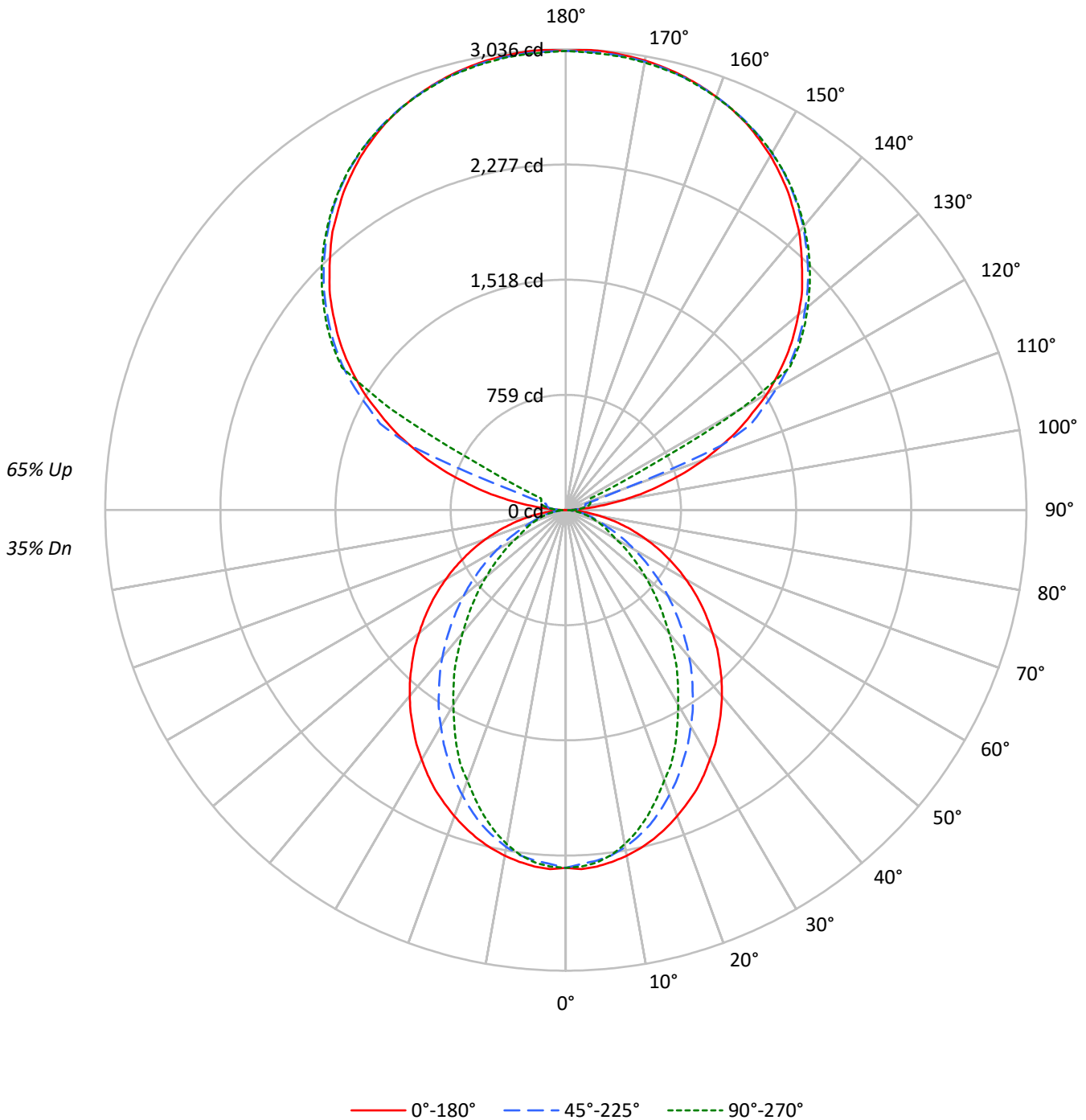
Test Method: LM-79-2019  
Report Number: P928630  
REPORT IS A COMBINATION OF REPORTS P900952 AND P896187  
Test Lab: INNOVATION CENTER  
Issue Date: 12/12/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-HX4F0-070D110US930-RLONL  
Description: 4 foot, 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: 13724.5 lumens  
Efficiency: N/A  
Efficacy: 89.4 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-Indirect  
  
Input Watts (W): 153.5  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9972  
Total Harmonic Distortion (THDi): 0.128  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT

TEST NUMBER: P928630  
CATALOG NUMBER: DFN2DIP-HX4F0-070D110US930-RLLONL

### Luminous Intensity Polar Plot





TEST NUMBER: P928630

CATALOG NUMBER: DFN2DIP-HX4F0-070D110US930-RLLONL

**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	104	104	104	104	94	94	94	94	75	75	75	58	58	58	43	43	43	35				35
1	95	91	87	84	86	82	79	76	66	64	62	52	50	49	38	37	37	30				30
2	87	80	74	69	78	72	67	63	58	55	52	46	44	41	34	33	31	26				26
3	79	70	63	58	71	64	58	53	52	48	44	41	38	35	30	29	27	22				22
4	73	62	55	49	65	57	50	45	46	42	38	36	33	31	27	25	24	20				20
5	67	56	48	42	60	51	44	39	41	37	33	33	29	27	25	23	21	17				17
6	61	50	42	37	55	46	39	34	37	32	29	30	26	24	23	20	18	15				15
7	57	45	37	32	51	41	35	30	34	29	25	27	24	21	21	18	16	14				14
8	53	41	33	28	48	37	31	26	31	26	23	25	21	19	19	17	15	12				12
9	49	37	30	25	44	34	28	24	28	24	20	23	19	17	18	15	13	11				11
10	46	34	27	23	42	31	25	21	26	21	18	21	18	15	16	14	12	10				10

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

	0°	45°	90°
0°	1753	1753	1753
5°	1756	1726	1737
10°	1739	1692	1680
15°	1715	1636	1593
20°	1684	1559	1486
25°	1651	1473	1382
30°	1608	1384	1251
35°	1565	1289	1136
40°	1522	1191	1004
45°	1472	1082	884
50°	1420	971	767
55°	1366	853	654
60°	1303	730	539
65°	1231	605	485
70°	1143	488	439
75°	1034	431	399
80°	874	362	347
85°	611	242	261

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 90°  
 Vertical Angle: 90°  
 Luminance: 1553 cd/sqm



TEST NUMBER: P928630

CATALOG NUMBER: DFN2DIP-HX4F0-070D110US930-RLONL

**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	221.0	1.6
10°-20°	606.6	4.4
20°-30°	851.7	6.2
30°-40°	928.4	6.8
40°-50°	853.3	6.2
50°-60°	670.1	4.9
60°-70°	436.2	3.2
70°-80°	224.5	1.6
80°-90°	62.6	0.5
90°-100°	99.8	0.7
100°-110°	371.9	2.7
110°-120°	986.4	7.2
120°-130°	1636.0	11.9
130°-140°	1737.8	12.7
140°-150°	1615.1	11.8
150°-160°	1298.5	9.5
160°-170°	836.7	6.1
170°-180°	288.0	2.1
0°-30°	1679.3	12.2
0°-40°	2607.7	19.0
0°-60°	4131.2	30.1
0°-90°	4854.5	35.4
90°-120°	1458.0	10.6
90°-150°	6446.8	47.0
90°-180°	8870.0	64.6
0°-180°	13724.5	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	2358	2358	2358	2358	2358	
5°	2358	2347	2319	2339	2332	224
15°	2243	2219	2147	2106	2085	632
25°	2036	1967	1826	1739	1707	936
35°	1754	1645	1458	1323	1276	1098
45°	1434	1291	1067	915	864	1107
55°	1090	924	693	566	525	974
65°	736	563	371	299	292	730
75°	393	243	171	156	154	415
85°	92	47	40	40	40	105
90°	2	26	44	55	59	13
95°	142	70	85	96	94	168
105°	666	731	134	158	166	711
115°	1259	1296	1351	337	180	1239
125°	1780	1808	1850	1865	1872	1587
135°	2202	2238	2257	2279	2275	1701
145°	2555	2553	2590	2605	2594	1598
155°	2813	2794	2820	2833	2816	1296
165°	2964	2951	2958	2973	2958	837
175°	3032	3017	3021	3036	3015	289
180°	3026	3026	3026	3026	3026	



TEST NUMBER: P928630

CATALOG NUMBER: DFN2DIP-HX4F0-070D110US930-RLONL

**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°
0°	2357.9	2357.9	2357.9	2357.9	2357.9
2.5°	2368.5	2357.9	2334.3	2355.8	2351.5
5°	2357.9	2347.2	2319.4	2338.6	2332.3
7.5°	2338.6	2325.9	2296.1	2304.4	2293.8
10°	2313.1	2298.1	2255.5	2249.0	2236.3
12.5°	2281.1	2261.9	2204.2	2191.5	2167.9
15°	2242.6	2219.1	2146.6	2106.1	2084.9
17.5°	2197.8	2163.7	2074.0	2027.1	1992.9
20°	2146.6	2103.8	1997.2	1944.0	1896.9
22.5°	2091.2	2042.1	1918.2	1845.7	1813.9
25°	2035.7	1967.3	1826.5	1739.1	1707.0
27.5°	1969.6	1896.9	1741.2	1640.9	1591.8
30°	1899.2	1817.9	1647.2	1538.6	1480.9
32.5°	1830.8	1732.6	1557.8	1429.7	1376.2
35°	1754.0	1645.2	1457.5	1323.1	1276.0
37.5°	1679.4	1561.9	1363.6	1216.1	1163.0
40°	1600.3	1472.5	1265.3	1113.9	1058.4
42.5°	1519.3	1382.8	1167.2	1009.2	956.1
45°	1434.0	1290.9	1067.0	915.3	864.1
47.5°	1352.9	1201.5	971.0	819.3	772.5
50°	1263.2	1111.8	877.0	729.7	685.1
52.5°	1175.6	1015.6	787.4	646.5	606.0
55°	1090.3	923.9	693.4	565.5	525.0
57.5°	1002.9	832.2	610.4	490.8	456.6
60°	913.3	742.5	522.7	414.1	379.9
62.5°	825.8	655.2	448.0	345.7	328.7
65°	736.2	563.2	371.3	298.9	292.3
67.5°	650.9	477.9	298.9	262.3	256.1
70°	561.2	394.8	247.4	226.2	217.5
72.5°	475.9	317.8	206.9	190.0	185.7
75°	392.6	243.1	170.7	155.7	153.7
77.5°	309.5	172.7	134.5	125.8	121.6
80°	232.5	123.8	102.4	94.0	94.0
82.5°	162.1	83.3	70.4	66.1	66.1
85°	91.7	46.9	40.5	40.5	40.5
87.5°	34.1	17.0	17.0	14.9	14.9
90°	2.1	26.2	43.7	54.8	59.0
92.5°	54.8	46.0	52.5	57.0	59.0
95°	142.2	69.9	85.2	96.4	94.1
97.5°	256.1	76.7	111.5	118.3	120.4
100°	387.6	87.6	124.8	142.2	146.6
102.5°	531.9	527.7	129.2	153.1	159.9
105°	665.5	731.3	133.7	157.5	166.4
107.5°	821.0	875.6	138.1	161.9	170.8
110°	969.9	1015.7	383.2	164.3	172.9



TEST NUMBER: P928630

CATALOG NUMBER: DFN2DIP-HX4F0-070D110US930-RLONL

**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°
112.5°	1110.1	1149.3	1112.1	168.5	175.2
115°	1258.8	1295.9	1350.9	337.2	179.6
117.5°	1388.0	1431.7	1469.1	1155.8	582.3
120°	1532.5	1565.3	1604.8	1631.1	1335.5
122.5°	1655.0	1690.1	1734.0	1747.0	1749.4
125°	1779.8	1808.4	1850.0	1865.3	1871.8
127.5°	1893.7	1924.3	1957.3	1979.1	1981.3
130°	2001.0	2036.1	2060.0	2084.2	2082.2
132.5°	2110.4	2139.0	2163.0	2182.7	2180.7
135°	2202.5	2237.6	2257.1	2279.2	2274.7
137.5°	2298.7	2325.0	2347.0	2368.9	2362.4
140°	2392.8	2410.4	2434.4	2454.1	2443.2
142.5°	2471.8	2487.1	2515.5	2532.9	2522.0
145°	2555.0	2552.7	2589.8	2605.2	2594.3
147.5°	2627.1	2620.6	2657.7	2668.6	2660.1
150°	2697.2	2681.9	2717.0	2730.0	2719.1
152.5°	2756.2	2738.8	2771.6	2784.9	2769.5
155°	2813.2	2793.7	2819.9	2832.9	2815.5
157.5°	2859.2	2841.7	2861.5	2876.9	2859.2
160°	2898.7	2885.4	2898.7	2911.7	2896.3
162.5°	2933.5	2920.6	2931.5	2946.8	2927.1
165°	2964.2	2951.2	2957.7	2973.0	2957.7
167.5°	2988.4	2975.2	2981.9	2997.2	2977.5
170°	3008.2	2994.9	2999.3	3014.7	2994.9
172.5°	3021.1	3008.2	3012.6	3027.9	3008.2
175°	3032.0	3016.7	3021.1	3036.5	3014.7
177.5°	3036.5	3021.1	3023.5	3038.8	3019.1
180°	3025.6	3025.6	3025.6	3025.6	3025.6



TEST NUMBER: P928630  
 CATALOG NUMBER: DFN2DIP-HX4F0-070D110US930-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	7.56	8.28	8.64	9.36	10.82	3.53	4.25	4.61	5.33	6.80
	3H	9.23	9.87	10.31	10.96	12.44	4.71	5.36	5.80	6.44	7.93
	4H	9.83	10.44	10.93	11.53	13.02	5.16	5.77	6.26	6.86	8.35
	6H	10.25	10.81	11.36	11.90	13.40	5.48	6.04	6.58	7.13	8.63
	8H	10.37	10.91	11.48	12.01	13.51	5.56	6.10	6.68	7.20	8.70
	12H	10.43	10.94	11.55	12.04	13.56	5.60	6.11	6.72	7.21	8.73
4H	2H	7.56	8.17	8.67	9.26	10.75	4.11	4.73	5.22	5.81	7.30
	3H	9.38	9.89	10.49	11.00	12.51	5.45	5.96	6.57	7.08	8.58
	4H	10.07	10.54	11.19	11.64	13.17	6.00	6.47	7.12	7.57	9.10
	6H	10.58	10.98	11.70	12.11	13.63	6.42	6.82	7.54	7.94	9.46
	8H	10.76	11.13	11.88	12.25	13.78	6.54	6.92	7.67	8.03	9.57
	12H	10.85	11.18	11.99	12.31	13.85	6.60	6.94	7.74	8.07	9.61
8H	4H	10.03	10.41	11.15	11.52	13.06	6.27	6.65	7.40	7.76	9.30
	6H	10.59	10.90	11.74	12.06	13.59	6.79	7.10	7.93	8.26	9.79
	8H	10.81	11.08	11.96	12.22	13.77	6.98	7.25	8.13	8.39	9.94
	12H	10.95	11.18	12.10	12.32	13.91	7.10	7.33	8.25	8.47	10.06
12H	4H	9.98	10.32	11.12	11.45	12.98	6.27	6.61	7.41	7.74	9.28
	6H	10.57	10.84	11.72	11.98	13.53	6.84	7.11	7.99	8.25	9.80
	8H	10.79	11.02	11.94	12.16	13.75	7.05	7.28	8.20	8.42	10.01