

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: P928764

Luminaire Tested: DFN2DIP-HX4F0-110D090US930-FLLONL

Issue Date: 12/12/2024

Test Information

Test Method: LM-79-2019
Report Number: P928764
REPORT IS A COMBINATION OF REPORTS P900923 AND P896187
Test Lab: INNOVATION CENTER
Issue Date: 12/12/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-HX4F0-110D090US930-FLLONL
Description: 4 foot, Hexagon Define Geo, with Direct Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

Summary

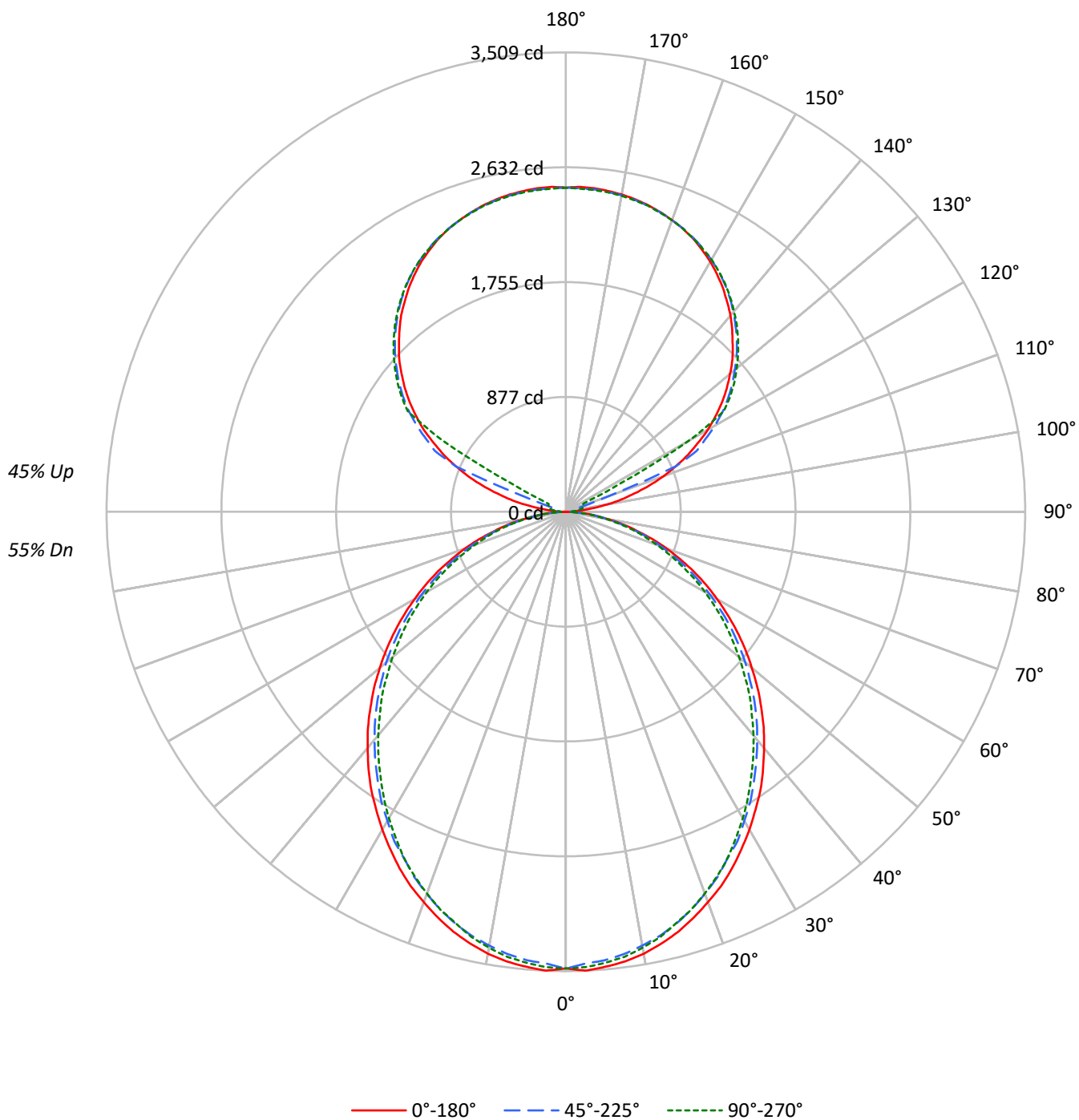
Lumens per Lamp: N/A
Luminaire Lumens: 16137.0 lumens
Efficiency: N/A
Efficacy: 89.6 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.54' x L: 4.09' x H: 0.1')
CIE Type: General Diffuse

Input Watts (W): 180.2
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: P928764

CATALOG NUMBER: DFN2DIP-HX4F0-110D090US930-FLLONL

Luminous Intensity Polar Plot



TEST NUMBER: P928764

CATALOG NUMBER: DFN2DIP-HX4F0-110D090US930-FLLONL

COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:

RF	20				20				20				20				20
RC	80				70				50				30				10
RW	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10
RCR																	
0	108	108	108	108	101	101	101	101	86	86	86	73	73	73	61	61	61
1	99	95	91	87	92	88	85	81	76	73	71	64	62	61	54	52	51
2	90	83	76	71	83	77	71	67	66	62	59	56	53	51	47	45	43
3	82	73	65	59	76	68	61	56	58	53	49	50	46	43	42	39	37
4	75	64	56	50	70	60	53	47	52	46	42	44	40	37	37	34	32
5	69	57	49	43	64	54	46	41	47	41	36	40	35	32	34	30	28
6	64	51	43	37	59	48	41	35	42	36	32	36	32	28	31	27	24
7	59	46	38	33	55	44	36	31	38	32	28	33	28	25	28	24	22
8	55	42	34	29	51	40	33	28	35	29	25	30	25	22	26	22	19
9	51	39	31	26	47	36	29	25	32	26	22	28	23	20	24	20	18
10	48	35	28	23	44	33	27	22	29	24	20	26	21	18	22	19	16

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	2594	2594	2594
5°	2598	2558	2575
10°	2577	2524	2540
15°	2540	2482	2486
20°	2489	2425	2430
25°	2438	2356	2366
30°	2374	2292	2284
35°	2314	2217	2197
40°	2240	2140	2115
45°	2166	2064	2031
50°	2085	1984	1933
55°	2000	1891	1843
60°	1904	1781	1741
65°	1800	1667	1619
70°	1667	1528	1489
75°	1483	1362	1369
80°	1262	1150	1139
85°	916	784	757

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 2166 cd/sqm

TEST NUMBER: P928764

CATALOG NUMBER: DFN2DIP-HX4F0-110D090US930-FLONL

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	328.3	2.0
10°-20°	923.8	5.7
20°-30°	1357.6	8.4
30°-40°	1576.7	9.8
40°-50°	1574.8	9.8
50°-60°	1373.2	8.5
60°-70°	1015.1	6.3
70°-80°	574.3	3.6
80°-90°	155.9	1.0
90°-100°	81.6	0.5
100°-110°	304.3	1.9
110°-120°	807.0	5.0
120°-130°	1338.5	8.3
130°-140°	1421.8	8.8
140°-150°	1321.4	8.2
150°-160°	1062.4	6.6
160°-170°	684.6	4.2
170°-180°	235.6	1.5
0°-30°	2609.7	16.2
0°-40°	4186.4	25.9
0°-60°	7134.4	44.2
0°-90°	8879.7	55.0
90°-120°	1193.0	7.4
90°-150°	5274.7	32.7
90°-180°	7257.0	45.0
0°-180°	16137.0	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	3488	3488	3488	3488	3488	
5°	3488	3475	3438	3465	3458	331
15°	3321	3301	3257	3270	3254	935
25°	3005	2979	2922	2928	2922	1383
35°	2593	2560	2506	2485	2469	1619
45°	2110	2086	2036	1999	1986	1628
55°	1597	1576	1536	1496	1479	1428
65°	1077	1057	1023	993	976	1065
75°	563	557	540	520	527	601
85°	137	134	131	121	117	153
90°	2	22	36	45	48	15
95°	116	57	70	79	77	138
105°	544	598	109	129	136	582
115°	1030	1060	1105	276	147	1014
125°	1456	1480	1514	1526	1532	1299
135°	1802	1831	1847	1865	1861	1392
145°	2090	2088	2119	2132	2123	1307
155°	2302	2286	2307	2318	2304	1061
165°	2425	2415	2420	2432	2420	685
175°	2481	2468	2472	2484	2466	236
180°	2476	2476	2476	2476	2476	

TEST NUMBER: P928764

CATALOG NUMBER: DFN2DIP-HX4F0-110D090US930-FLLONL

CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	3488.4	3488.4	3488.4	3488.4	3488.4
2.5°	3508.6	3491.9	3454.9	3488.4	3481.9
5°	3488.4	3475.2	3438.2	3464.8	3458.5
7.5°	3464.8	3444.9	3407.9	3435.0	3428.2
10°	3428.2	3404.7	3364.5	3391.1	3381.2
12.5°	3377.7	3357.7	3317.5	3334.2	3327.5
15°	3320.7	3300.8	3257.0	3270.5	3253.8
17.5°	3250.2	3230.3	3186.6	3203.3	3186.6
20°	3173.0	3153.1	3106.1	3116.1	3102.9
22.5°	3096.2	3065.9	3022.1	3022.1	3015.3
25°	3005.4	2978.7	2921.8	2928.2	2921.8
27.5°	2904.7	2881.2	2837.7	2827.8	2811.1
30°	2804.3	2777.3	2727.1	2717.1	2703.6
32.5°	2696.8	2676.9	2623.2	2602.9	2589.3
35°	2592.9	2559.5	2505.7	2485.4	2468.7
37.5°	2475.5	2445.2	2391.5	2368.0	2351.3
40°	2354.9	2327.8	2274.1	2244.2	2230.7
42.5°	2237.4	2210.4	2157.0	2123.2	2103.3
45°	2110.0	2086.5	2036.0	1999.4	1985.8
47.5°	1985.8	1962.4	1908.6	1871.6	1851.6
50°	1854.9	1838.2	1791.1	1744.2	1727.5
52.5°	1727.5	1703.9	1660.6	1623.5	1600.0
55°	1596.8	1576.5	1536.4	1496.1	1479.4
57.5°	1465.9	1449.2	1405.4	1365.1	1351.6
60°	1334.9	1321.8	1274.7	1237.7	1227.8
62.5°	1207.5	1184.0	1150.5	1117.1	1103.6
65°	1076.9	1056.6	1023.2	992.9	976.2
67.5°	942.7	925.7	895.8	872.3	858.8
70°	818.5	805.0	774.7	751.3	738.1
72.5°	691.1	677.6	660.9	637.4	627.4
75°	563.3	557.0	539.9	520.0	526.7
77.5°	449.5	435.9	429.2	419.2	409.3
80°	335.6	332.0	325.3	315.3	308.6
82.5°	228.1	228.1	224.9	211.4	211.4
85°	137.4	134.1	131.0	120.6	117.4
87.5°	60.5	53.7	46.9	37.0	33.4
90°	1.7	21.5	35.7	44.9	48.2
92.5°	44.9	37.7	43.0	46.6	48.2
95°	116.4	57.2	69.8	78.9	77.0
97.5°	209.5	62.8	91.3	96.7	98.5
100°	317.1	71.7	102.1	116.4	120.0
102.5°	435.2	431.8	105.7	125.3	130.8
105°	544.5	598.4	109.3	128.9	136.1
107.5°	671.7	716.4	113.0	132.5	139.8
110°	793.6	831.1	313.5	134.4	141.5

TEST NUMBER: P928764

CATALOG NUMBER: DFN2DIP-HX4F0-110D090US930-FLLONL

CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	908.2	940.3	909.9	137.8	143.4
115°	1029.9	1060.3	1105.2	275.9	146.9
117.5°	1135.6	1171.4	1202.0	945.7	476.4
120°	1253.9	1280.7	1313.0	1334.5	1092.7
122.5°	1354.1	1382.8	1418.8	1429.3	1431.3
125°	1456.2	1479.6	1513.6	1526.2	1531.5
127.5°	1549.3	1574.4	1601.5	1619.3	1621.0
130°	1637.2	1665.9	1685.5	1705.2	1703.6
132.5°	1726.7	1750.1	1769.7	1785.9	1784.2
135°	1802.0	1830.7	1846.7	1864.8	1861.2
137.5°	1880.8	1902.2	1920.3	1938.2	1932.9
140°	1957.7	1972.2	1991.8	2007.9	1999.0
142.5°	2022.4	2035.0	2058.1	2072.4	2063.5
145°	2090.5	2088.5	2119.0	2131.6	2122.6
147.5°	2149.4	2144.1	2174.5	2183.5	2176.4
150°	2206.9	2194.3	2223.0	2233.6	2224.7
152.5°	2255.1	2240.8	2267.7	2278.5	2265.9
155°	2301.7	2285.7	2307.2	2317.9	2303.6
157.5°	2339.4	2325.1	2341.3	2353.8	2339.4
160°	2371.6	2360.8	2371.6	2382.3	2369.8
162.5°	2400.2	2389.5	2398.5	2411.0	2394.9
165°	2425.3	2414.6	2420.0	2432.5	2420.0
167.5°	2445.1	2434.2	2439.7	2452.3	2436.1
170°	2461.2	2450.4	2454.0	2466.5	2450.4
172.5°	2471.9	2461.2	2464.8	2477.4	2461.2
175°	2480.8	2468.2	2471.9	2484.4	2466.5
177.5°	2484.4	2471.9	2473.8	2486.3	2470.2
180°	2475.5	2475.5	2475.5	2475.5	2475.5

TEST NUMBER: P928764

CATALOG NUMBER: DFN2DIP-HX4F0-110D090US930-FLLONL

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	11.04	11.94	11.95	12.88	14.07	10.60	11.51	11.52	12.44	13.64
	3H	12.70	13.52	13.63	14.46	15.68	12.23	13.04	13.15	13.98	15.21
	4H	13.29	14.06	14.23	15.01	16.24	12.82	13.59	13.76	14.53	15.77
	6H	13.69	14.41	14.65	15.36	16.60	13.22	13.93	14.17	14.88	16.13
	8H	13.80	14.48	14.76	15.45	16.69	13.33	14.00	14.28	14.97	16.21
	12H	13.85	14.50	14.81	15.46	16.73	13.37	14.01	14.33	14.98	16.24
4H	2H	11.50	12.28	12.45	13.22	14.45	11.16	11.93	12.10	12.88	14.11
	3H	13.38	14.02	14.33	15.00	16.24	12.98	13.63	13.94	14.60	15.85
	4H	14.09	14.68	15.06	15.65	16.92	13.69	14.27	14.65	15.25	16.51
	6H	14.61	15.12	15.59	16.11	17.38	14.20	14.71	15.18	15.70	16.97
	8H	14.76	15.24	15.74	16.22	17.51	14.35	14.82	15.33	15.81	17.09
	12H	14.84	15.27	15.84	16.27	17.56	14.42	14.84	15.41	15.85	17.14
8H	4H	14.29	14.77	15.27	15.75	17.04	13.93	14.41	14.91	15.39	16.68
	6H	14.93	15.32	15.93	16.35	17.63	14.57	14.96	15.57	15.99	17.27
	8H	15.15	15.50	16.16	16.51	17.81	14.78	15.13	15.79	16.14	17.44
	12H	15.29	15.59	16.30	16.60	17.95	14.90	15.20	15.92	16.22	17.56
12H	4H	14.28	14.71	15.28	15.71	17.00	13.93	14.36	14.93	15.36	16.65
	6H	14.96	15.31	15.97	16.32	17.62	14.61	14.95	15.62	15.97	17.27
	8H	15.20	15.51	16.22	16.52	17.86	14.85	15.15	15.86	16.16	17.51