

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: P928766

Luminaire Tested: DFN2DIP-HX4F0-110D090US930-RLLONL

Issue Date: 12/12/2024

Test Information

Test Method: LM-79-2019
Report Number: P928766
REPORT IS A COMBINATION OF REPORTS P900924 AND P896187
Test Lab: INNOVATION CENTER
Issue Date: 12/12/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-HX4F0-110D090US930-RLLONL
Description: 4 foot, Hexagon Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

Summary

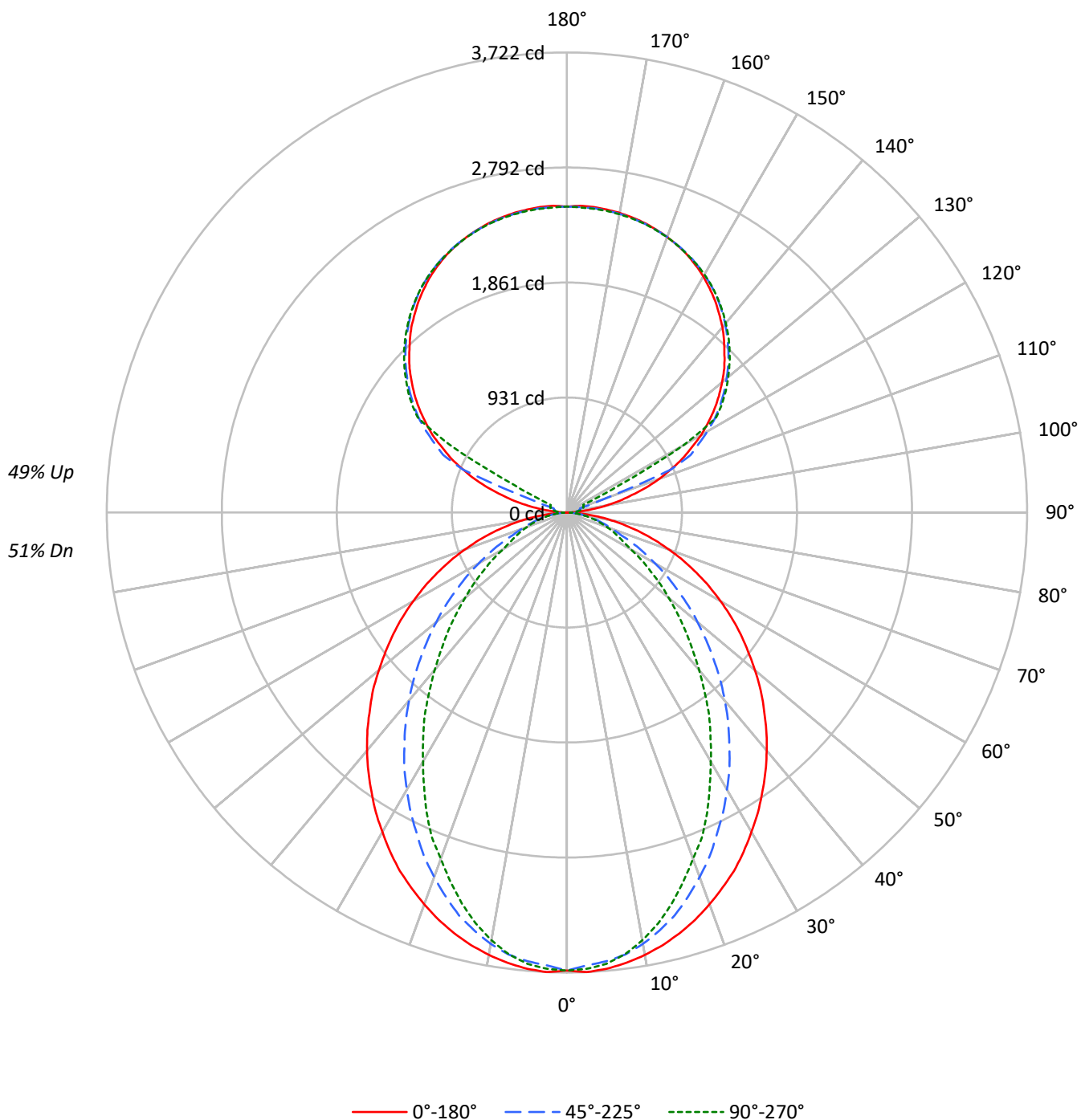
Lumens per Lamp: N/A
Luminaire Lumens: 14881.9 lumens
Efficiency: N/A
Efficacy: 82.6 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16
Luminous Opening: Rectangular w/ Sides (W: 3.54' x L: 4.09' x H: 0.1')
CIE Type: General Diffuse

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

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Luminous Intensity Polar Plot



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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	107	107	107	107	99	99	99	99	84	84	84	70	70	70	57	57	57
1	99	94	91	87	91	87	84	81	74	72	70	62	61	59	51	50	49
2	90	83	77	72	83	77	72	68	66	62	59	55	53	50	46	44	42
3	83	73	66	61	76	68	62	57	58	54	50	49	46	43	41	39	37
4	76	65	58	52	70	61	54	49	52	47	43	44	41	37	37	34	32
5	70	58	51	45	64	54	48	42	47	42	37	40	36	33	34	31	28
6	64	53	45	39	59	49	42	37	43	37	33	36	32	29	31	27	25
7	60	48	40	34	55	45	38	33	39	33	29	33	29	26	28	25	22
8	55	43	36	31	51	41	34	29	35	30	26	31	26	23	26	23	20
9	52	40	32	27	48	37	31	26	33	27	24	28	24	21	24	21	18
10	48	37	29	25	45	34	28	24	30	25	21	26	22	19	22	19	17

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

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	347.3	2.3
10°-20°	953.3	6.4
20°-30°	1338.4	9.0
30°-40°	1458.9	9.8
40°-50°	1340.9	9.0
50°-60°	1053.1	7.1
60°-70°	685.5	4.6
70°-80°	352.9	2.4
80°-90°	94.5	0.6
90°-100°	81.6	0.5
100°-110°	304.3	2.0
110°-120°	807.0	5.4
120°-130°	1338.5	9.0
130°-140°	1421.8	9.6
140°-150°	1321.4	8.9
150°-160°	1062.4	7.1
160°-170°	684.6	4.6
170°-180°	235.6	1.6
0°-30°	2638.9	17.7
0°-40°	4097.9	27.5
0°-60°	6491.9	43.6
0°-90°	7624.6	51.2
90°-120°	1193.0	8.0
90°-150°	5274.7	35.4
90°-180°	7257.0	48.8
0°-180°	14881.9	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°	2	22	36	45	48	14
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	

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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°	1.7	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



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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

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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	10.78	11.62	11.74	12.59	13.84	6.76	7.60	7.71	8.56	9.82
	3H	12.46	13.21	13.43	14.19	15.47	7.95	8.70	8.91	9.67	10.95
	4H	13.07	13.78	14.05	14.76	16.05	8.40	9.11	9.38	10.09	11.38
	6H	13.50	14.15	14.49	15.13	16.43	8.72	9.38	9.71	10.36	11.66
	8H	13.62	14.24	14.62	15.24	16.54	8.82	9.44	9.81	10.44	11.73
	12H	13.69	14.28	14.69	15.27	16.59	8.86	9.45	9.86	10.44	11.77
4H	2H	10.80	11.51	11.79	12.49	13.78	7.35	8.06	8.34	9.04	10.33
	3H	12.64	13.23	13.63	14.23	15.53	8.71	9.30	9.70	10.30	11.61
	4H	13.33	13.87	14.33	14.87	16.19	9.26	9.80	10.26	10.80	12.12
	6H	13.85	14.31	14.86	15.33	16.65	9.68	10.14	10.69	11.17	12.49
	8H	14.02	14.45	15.04	15.47	16.81	9.81	10.24	10.82	11.26	12.60
	12H	14.12	14.51	15.15	15.54	16.88	9.88	10.27	10.91	11.30	12.64
8H	4H	13.30	13.73	14.31	14.75	16.08	9.54	9.97	10.55	10.99	12.32
	6H	13.87	14.22	14.90	15.28	16.62	10.06	10.42	11.10	11.48	12.81
	8H	14.08	14.40	15.13	15.44	16.79	10.25	10.57	11.30	11.61	12.96
	12H	14.22	14.50	15.27	15.54	16.93	10.37	10.65	11.42	11.69	13.09
12H	4H	13.25	13.64	14.28	14.67	16.01	9.54	9.93	10.58	10.97	12.31
	6H	13.84	14.16	14.89	15.20	16.55	10.11	10.42	11.16	11.47	12.82
	8H	14.06	14.34	15.11	15.38	16.78	10.32	10.60	11.37	11.64	13.03

END OF REPORT