

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: P928772

Luminaire Tested: DFN2DIP-HX4F0-110D110US930-FLLONL

Issue Date: 12/12/2024

Test Information

Test Method: LM-79-2019
Report Number: P928772
REPORT IS A COMBINATION OF REPORTS P900959 AND P896187
Test Lab: INNOVATION CENTER
Issue Date: 12/12/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-HX4F0-110D110US930-FLONL
Description: 4 foot, Hexagon Define Geo, with Direct Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

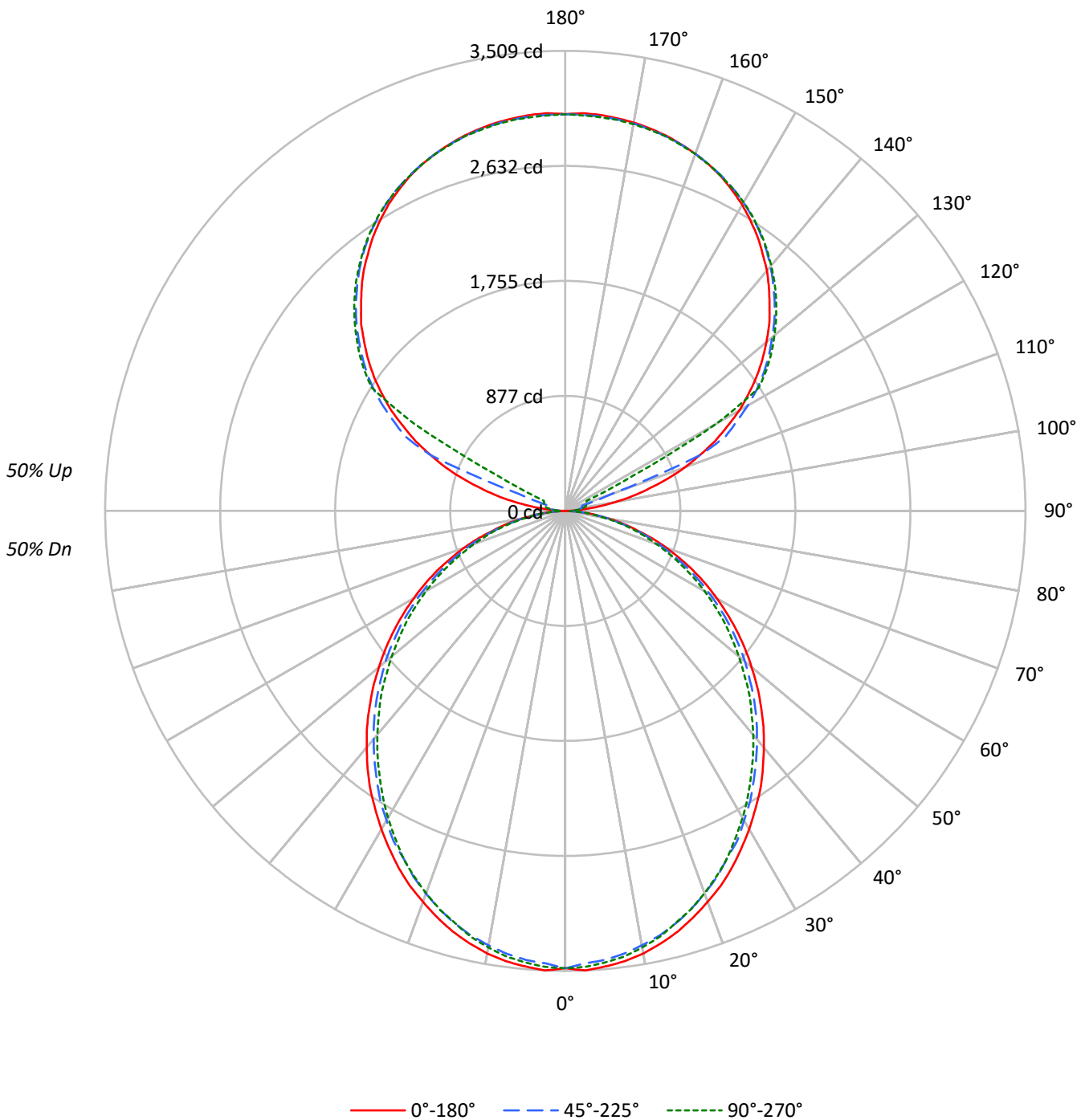
Summary

Lumens per Lamp: N/A
Luminaire Lumens: 17750.7 lumens
Efficiency: N/A
Efficacy: 89.0 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): 199.5
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	50	30	10
RCR																				
0	107	107	107	107	99	99	99	99	83	83	83	69	69	69	56	56	56	42	42	42
1	98	93	90	86	90	86	83	80	73	71	68	61	59	58	50	48	47	42	42	42
2	89	82	75	70	82	76	70	66	64	60	57	53	51	48	44	42	40	35	35	35
3	81	72	64	59	75	66	60	55	56	52	48	47	44	41	39	36	34	30	30	30
4	74	64	56	50	68	59	52	47	50	45	41	42	38	35	35	32	29	26	26	26
5	68	57	48	42	63	53	45	40	45	39	35	38	34	30	31	28	26	22	22	22
6	63	51	43	37	58	47	40	35	40	35	31	34	30	27	28	25	23	20	20	20
7	58	46	38	32	53	43	36	30	37	31	27	31	27	23	26	23	20	17	17	17
8	54	42	34	29	50	39	32	27	33	28	24	28	24	21	24	20	18	16	16	16
9	50	38	30	25	46	35	29	24	31	25	21	26	22	19	22	19	16	14	14	14
10	47	35	28	23	43	33	26	22	28	23	19	24	20	17	20	17	15	13	13	13

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



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	328.3	1.8
10°-20°	923.8	5.2
20°-30°	1357.6	7.6
30°-40°	1576.7	8.9
40°-50°	1574.8	8.9
50°-60°	1373.2	7.7
60°-70°	1015.1	5.7
70°-80°	574.3	3.2
80°-90°	156.9	0.9
90°-100°	99.8	0.6
100°-110°	371.9	2.1
110°-120°	986.4	5.6
120°-130°	1636.0	9.2
130°-140°	1737.8	9.8
140°-150°	1615.1	9.1
150°-160°	1298.5	7.3
160°-170°	836.7	4.7
170°-180°	288.0	1.6
0°-30°	2609.7	14.7
0°-40°	4186.4	23.6
0°-60°	7134.4	40.2
0°-90°	8880.7	50.0
90°-120°	1458.0	8.2
90°-150°	6446.8	36.3
90°-180°	8870.0	50.0
0°-180°	17750.7	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	26	44	55	59	16
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	



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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°	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



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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



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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	10.59	11.45	11.54	12.42	13.69	10.16	11.02	11.11	11.99	13.26
	3H	12.25	13.02	13.22	14.00	15.30	11.78	12.55	12.74	13.53	14.82
	4H	12.84	13.57	13.82	14.55	15.86	12.36	13.09	13.34	14.08	15.38
	6H	13.24	13.91	14.23	14.90	16.22	12.76	13.44	13.75	14.43	15.74
	8H	13.34	13.98	14.34	14.99	16.30	12.87	13.51	13.87	14.52	15.83
	12H	13.39	14.00	14.40	15.00	16.34	12.91	13.52	13.91	14.52	15.86
4H	2H	11.05	11.78	12.04	12.77	14.07	10.70	11.44	11.69	12.42	13.72
	3H	12.92	13.53	13.91	14.54	15.86	12.52	13.13	13.52	14.15	15.46
	4H	13.63	14.19	14.64	15.20	16.54	13.23	13.78	14.23	14.79	16.13
	6H	14.15	14.63	15.16	15.66	17.00	13.74	14.22	14.75	15.25	16.59
	8H	14.30	14.75	15.32	15.77	17.12	13.89	14.34	14.90	15.36	16.71
	12H	14.37	14.78	15.41	15.82	17.17	13.95	14.36	14.99	15.39	16.75
8H	4H	13.83	14.28	14.85	15.30	16.65	13.47	13.92	14.49	14.94	16.29
	6H	14.46	14.83	15.50	15.90	17.25	14.10	14.47	15.14	15.54	16.88
	8H	14.68	15.01	15.73	16.06	17.43	14.31	14.64	15.36	15.69	17.06
	12H	14.82	15.10	15.87	16.15	17.56	14.43	14.72	15.48	15.76	17.17
12H	4H	13.82	14.22	14.85	15.26	16.62	13.46	13.87	14.50	14.91	16.26
	6H	14.49	14.82	15.54	15.87	17.24	14.14	14.47	15.19	15.52	16.89
	8H	14.74	15.02	15.79	16.07	17.48	14.38	14.67	15.43	15.71	17.12