

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: P928802

Luminaire Tested: DFN2DIP-HX4F0-120D090US930-RLLONL

Issue Date: 12/12/2024

Test Information

Test Method: LM-79-2019
Report Number: P928802
REPORT IS A COMBINATION OF REPORTS P900926 AND P896187
Test Lab: INNOVATION CENTER
Issue Date: 12/12/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-HX4F0-120D090US930-RLONL
Description: 4 foot, Hexagon Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

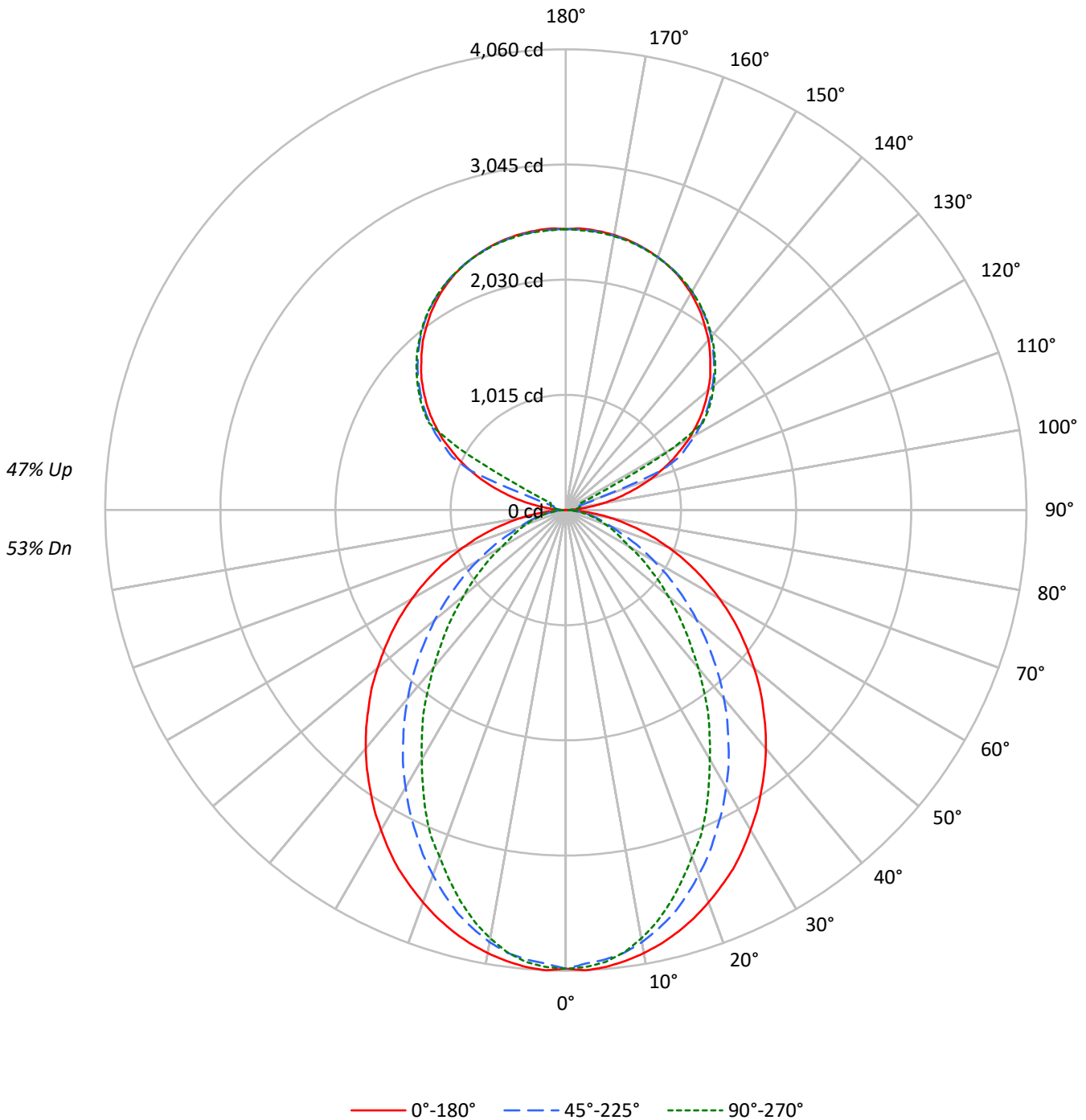
Summary

Lumens per Lamp: N/A
Luminaire Lumens: 15574.7 lumens
Efficiency: N/A
Efficacy: 80.2 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): 194.1
Input Voltage (V):
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.9954
Total Harmonic Distortion (THDi): 0.076
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		0	
RW	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	50	30	10
RCR																				
0	108	108	108	108	100	100	100	100	85	85	85	72	72	72	59	59	59	53		
1	99	95	91	88	92	88	85	82	76	73	71	64	62	61	53	52	51	46		
2	91	83	78	73	84	78	73	68	67	63	60	57	54	52	47	45	44	39		
3	83	74	67	61	77	69	63	58	59	55	51	51	47	44	42	40	38	34		
4	76	66	58	52	70	61	55	49	53	48	44	45	42	38	38	35	33	30		
5	70	59	51	45	65	55	48	43	48	42	38	41	37	34	35	32	29	26		
6	65	53	45	39	60	50	43	37	43	38	34	37	33	30	32	28	26	23		
7	60	48	40	35	56	45	38	33	39	34	30	34	30	26	29	26	23	21		
8	56	44	36	31	52	41	34	29	36	31	27	31	27	24	27	24	21	19		
9	52	40	33	28	48	38	31	26	33	28	24	29	25	22	25	22	19	17		
10	49	37	30	25	45	35	28	24	31	25	22	27	23	20	23	20	17	16		

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	3006	3006	3006
5°	3011	2958	2977
10°	2981	2900	2880
15°	2940	2805	2731
20°	2886	2673	2547
25°	2831	2525	2370
30°	2756	2373	2145
35°	2684	2210	1947
40°	2609	2042	1720
45°	2523	1854	1515
50°	2434	1665	1314
55°	2341	1463	1121
60°	2234	1252	923
65°	2110	1037	831
70°	1960	837	752
75°	1771	738	685
80°	1499	620	594
85°	1048	415	448

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°
 Vertical Angle: 45°
 Luminance: 2523 cd/sqm



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	378.8	2.4
10°-20°	1040.0	6.7
20°-30°	1460.1	9.4
30°-40°	1591.6	10.2
40°-50°	1462.8	9.4
50°-60°	1148.8	7.4
60°-70°	747.8	4.8
70°-80°	384.9	2.5
80°-90°	102.6	0.7
90°-100°	81.6	0.5
100°-110°	304.3	2.0
110°-120°	807.0	5.2
120°-130°	1338.5	8.6
130°-140°	1421.8	9.1
140°-150°	1321.4	8.5
150°-160°	1062.4	6.8
160°-170°	684.6	4.4
170°-180°	235.6	1.5
0°-30°	2878.9	18.5
0°-40°	4470.4	28.7
0°-60°	7082.1	45.5
0°-90°	8317.4	53.4
90°-120°	1193.0	7.7
90°-150°	5274.7	33.9
90°-180°	7257.0	46.6
0°-180°	15574.7	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	4042	4042	4042	4042	4042	
5°	4042	4024	3976	4009	3998	383
15°	3844	3804	3680	3610	3574	1083
25°	3490	3373	3131	2981	2926	1605
35°	3007	2820	2498	2268	2187	1882
45°	2458	2213	1829	1569	1481	1898
55°	1869	1584	1189	969	900	1670
65°	1262	966	636	512	501	1251
75°	673	417	293	267	264	712
85°	157	80	69	69	69	180
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	



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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	4042.1	4042.1	4042.1	4042.1	4042.1
2.5°	4060.3	4042.1	4001.7	4038.6	4031.2
5°	4042.1	4023.8	3976.1	4009.1	3998.2
7.5°	4009.1	3987.3	3936.1	3950.5	3932.2
10°	3965.2	3939.6	3866.6	3855.4	3833.7
12.5°	3910.5	3877.5	3778.5	3756.8	3716.5
15°	3844.5	3804.2	3680.0	3610.4	3574.0
17.5°	3767.7	3709.1	3555.4	3475.1	3416.5
20°	3680.0	3606.6	3423.8	3332.6	3251.8
22.5°	3584.9	3500.7	3288.4	3164.2	3109.5
25°	3489.8	3372.6	3131.1	2981.4	2926.3
27.5°	3376.5	3251.8	2984.9	2813.0	2728.7
30°	3255.8	3116.5	2823.8	2637.5	2538.6
32.5°	3138.6	2970.1	2670.5	2450.9	2359.3
35°	3007.0	2820.3	2498.5	2268.1	2187.3
37.5°	2878.9	2677.5	2337.5	2084.9	1993.7
40°	2743.5	2524.2	2169.1	1909.5	1814.4
42.5°	2604.5	2370.5	2001.1	1730.2	1639.0
45°	2458.2	2213.0	1829.1	1569.1	1481.3
47.5°	2319.2	2059.7	1664.6	1404.6	1324.2
50°	2165.6	1906.0	1503.5	1250.9	1174.4
52.5°	2015.4	1741.0	1349.8	1108.4	1039.0
55°	1869.1	1583.9	1188.8	969.4	900.0
57.5°	1719.2	1426.7	1046.3	841.4	782.8
60°	1565.6	1272.9	896.1	709.9	651.3
62.5°	1415.8	1123.2	768.1	592.7	563.5
65°	1262.1	965.6	636.5	512.3	501.1
67.5°	1115.8	819.2	512.3	449.8	439.0
70°	962.1	676.9	424.2	387.7	372.9
72.5°	815.8	544.9	354.7	325.6	318.3
75°	672.9	416.8	292.7	267.0	263.5
77.5°	530.6	296.1	230.6	215.8	208.4
80°	398.6	212.3	175.4	161.0	161.0
82.5°	277.9	142.8	120.7	113.3	113.3
85°	157.2	80.4	69.4	69.4	69.4
87.5°	58.6	29.1	29.1	25.6	25.6
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	11.28	12.14	12.22	13.09	14.31	7.26	8.12	8.19	9.06	10.29
	3H	12.96	13.73	13.91	14.69	15.94	8.45	9.22	9.40	10.17	11.42
	4H	13.58	14.30	14.54	15.26	16.52	8.90	9.63	9.86	10.59	11.85
	6H	14.00	14.67	14.97	15.63	16.90	9.23	9.89	10.20	10.86	12.13
	8H	14.13	14.76	15.10	15.74	17.01	9.32	9.95	10.30	10.94	12.20
	12H	14.19	14.79	15.17	15.77	17.06	9.36	9.97	10.35	10.94	12.24
4H	2H	11.31	12.03	12.27	12.99	14.25	7.86	8.58	8.82	9.54	10.80
	3H	13.14	13.74	14.11	14.73	16.00	9.21	9.81	10.19	10.80	12.08
	4H	13.83	14.38	14.82	15.37	16.66	9.76	10.31	10.75	11.30	12.59
	6H	14.35	14.82	15.35	15.83	17.13	10.18	10.66	11.18	11.66	12.96
	8H	14.53	14.97	15.53	15.97	17.28	10.32	10.76	11.31	11.76	13.06
	12H	14.62	15.02	15.64	16.04	17.35	10.38	10.78	11.40	11.80	13.11
8H	4H	13.80	14.25	14.80	15.25	16.55	10.04	10.49	11.04	11.49	12.79
	6H	14.37	14.74	15.39	15.78	17.08	10.57	10.93	11.59	11.97	13.28
	8H	14.59	14.91	15.62	15.94	17.26	10.76	11.08	11.79	12.11	13.43
	12H	14.73	15.01	15.76	16.04	17.41	10.88	11.16	11.91	12.19	13.56
12H	4H	13.76	14.15	14.77	15.17	16.48	10.05	10.45	11.07	11.47	12.78
	6H	14.35	14.67	15.38	15.70	17.02	10.62	10.94	11.65	11.97	13.29
	8H	14.57	14.85	15.60	15.88	17.25	10.83	11.11	11.86	12.14	13.50