

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: P929170

Luminaire Tested: DFN2DIP-HX4F0-040D110US940-RLLONL

Issue Date: 12/12/2024

Test Information

Test Method: LM-79-2019
Report Number: P929170
REPORT IS A COMBINATION OF REPORTS P900946 AND P896187
Test Lab: INNOVATION CENTER
Issue Date: 12/12/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-HX4F0-040D110US940-RLONL
Description: 4 foot, Hexagon Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

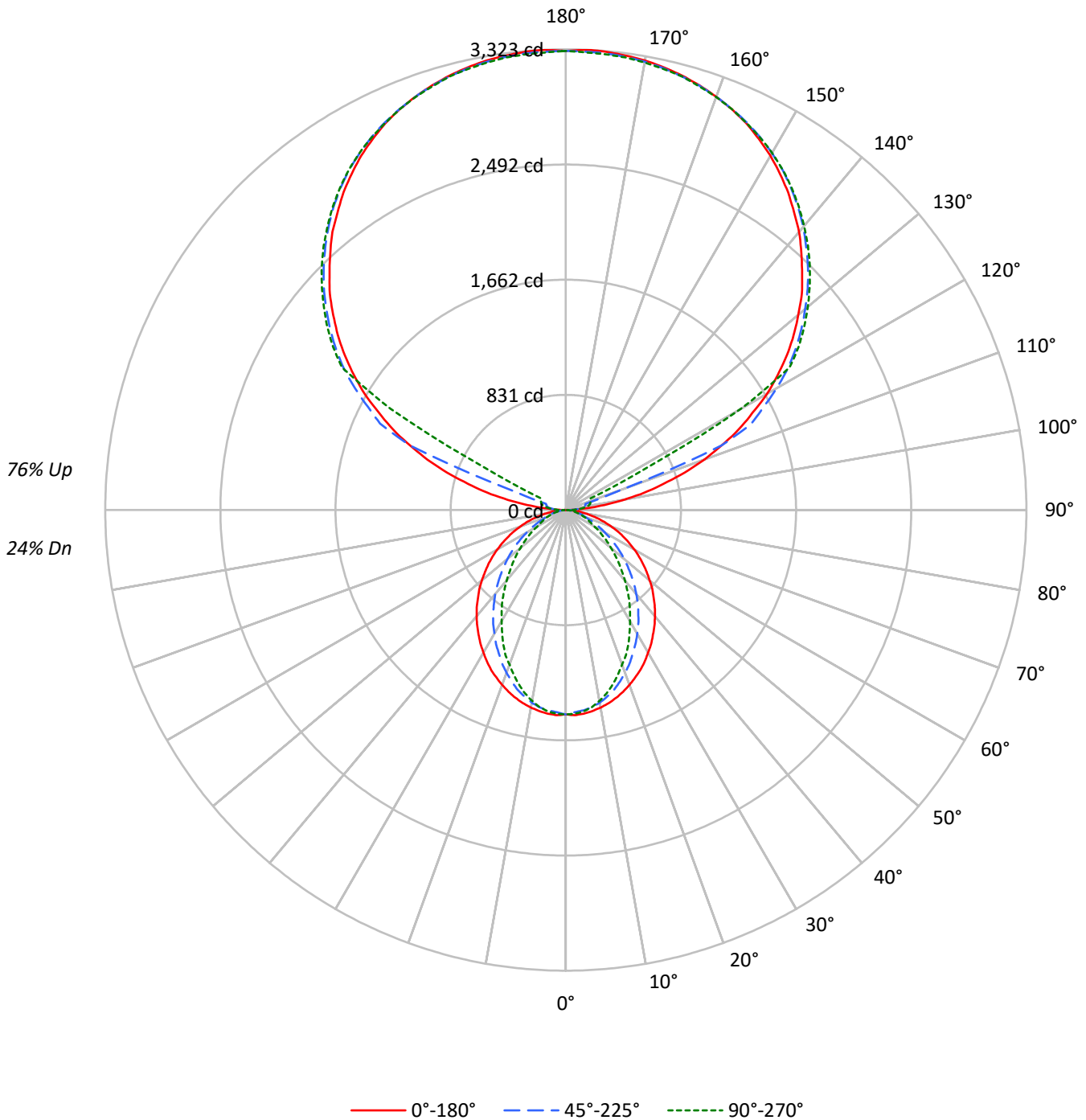
Summary

Lumens per Lamp: N/A
Luminaire Lumens: 12746.7 lumens
Efficiency: N/A
Efficacy: 105.8 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): 120.5
Input Voltage (V):
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.9977
Total Harmonic Distortion (THDi): 0.049
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				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	101	101	101	101	90	90	90	90	69	69	69	50	50	50	32	32	32	24				24
1	92	88	84	81	82	78	75	73	60	58	57	44	43	42	29	28	27	21				21
2	84	77	71	67	75	69	64	60	53	50	47	39	37	35	25	24	23	18				18
3	77	68	61	56	68	61	55	50	47	43	40	34	32	30	23	21	20	15				15
4	70	60	53	47	62	54	48	43	42	38	34	31	28	26	20	19	18	13				13
5	64	53	46	40	57	48	41	37	37	33	29	28	25	22	19	17	15	12				12
6	59	48	40	35	53	43	36	32	34	29	26	25	22	20	17	15	14	10				10
7	55	43	36	30	49	39	32	28	30	26	22	23	20	17	15	14	12	9				9
8	51	39	32	27	45	35	29	24	28	23	20	21	18	15	14	12	11	8				8
9	47	36	28	24	42	32	26	22	25	21	18	19	16	14	13	11	10	8				8
10	44	32	26	21	39	29	23	19	23	19	16	18	15	12	12	10	9	7				7

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	1097	1097	1097
5°	1098	1079	1086
10°	1088	1058	1051
15°	1073	1023	996
20°	1053	975	929
25°	1033	921	864
30°	1006	866	782
35°	979	806	710
40°	952	745	628
45°	921	676	553
50°	888	608	479
55°	854	534	409
60°	815	457	337
65°	770	378	303
70°	715	305	274
75°	646	269	250
80°	547	226	217
85°	383	151	163

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 90°
 Vertical Angle: 90°
 Luminance: 1701 cd/sqm



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	138.2	1.1
10°-20°	379.4	3.0
20°-30°	532.7	4.2
30°-40°	580.6	4.6
40°-50°	533.7	4.2
50°-60°	419.1	3.3
60°-70°	272.8	2.1
70°-80°	140.4	1.1
80°-90°	41.7	0.3
90°-100°	109.2	0.9
100°-110°	407.0	3.2
110°-120°	1079.6	8.5
120°-130°	1790.5	14.0
130°-140°	1902.0	14.9
140°-150°	1767.7	13.9
150°-160°	1421.2	11.1
160°-170°	915.7	7.2
170°-180°	315.2	2.5
0°-30°	1050.3	8.2
0°-40°	1630.9	12.8
0°-60°	2583.7	20.3
0°-90°	3038.6	23.8
90°-120°	1595.8	12.5
90°-150°	7055.9	55.4
90°-180°	9708.0	76.2
0°-180°	12746.7	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	1475	1475	1475	1475	1475	
5°	1475	1468	1451	1463	1459	140
15°	1403	1388	1342	1317	1304	395
25°	1273	1230	1142	1088	1068	586
35°	1097	1029	912	827	798	687
45°	897	807	667	572	540	693
55°	682	578	434	354	328	609
65°	460	352	232	187	183	457
75°	246	152	107	97	96	260
85°	57	29	25	25	25	66
90°	2	29	48	60	65	12
95°	156	76	93	106	103	184
105°	728	800	146	172	182	778
115°	1378	1418	1478	369	197	1356
125°	1948	1979	2025	2042	2049	1737
135°	2411	2449	2470	2495	2490	1862
145°	2796	2794	2834	2851	2839	1749
155°	3079	3058	3086	3101	3082	1419
165°	3244	3230	3237	3254	3237	917
175°	3318	3302	3307	3323	3300	316
180°	3312	3312	3312	3312	3312	



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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	1474.7	1474.7	1474.7	1474.7	1474.7
2.5°	1481.3	1474.7	1459.9	1473.4	1470.6
5°	1474.7	1468.0	1450.6	1462.6	1458.7
7.5°	1462.6	1454.7	1436.0	1441.2	1434.6
10°	1446.6	1437.3	1410.6	1406.5	1398.7
12.5°	1426.7	1414.6	1378.5	1370.6	1355.8
15°	1402.6	1387.9	1342.5	1317.2	1303.9
17.5°	1374.6	1353.2	1297.1	1267.8	1246.4
20°	1342.5	1315.8	1249.1	1215.8	1186.4
22.5°	1307.9	1277.2	1199.7	1154.3	1134.4
25°	1273.2	1230.4	1142.3	1087.7	1067.5
27.5°	1231.9	1186.4	1089.0	1026.2	995.5
30°	1187.8	1136.9	1030.2	962.2	926.2
32.5°	1145.1	1083.6	974.2	894.1	860.7
35°	1097.1	1028.9	911.5	827.4	798.0
37.5°	1050.3	976.8	852.8	760.6	727.3
40°	1000.9	920.9	791.4	696.7	662.0
42.5°	950.2	864.8	730.0	631.2	597.9
45°	896.8	807.3	667.3	572.5	540.5
47.5°	846.2	751.4	607.3	512.5	483.1
50°	790.0	695.3	548.5	456.3	428.4
52.5°	735.3	635.2	492.5	404.3	379.0
55°	681.9	577.8	433.7	353.7	328.3
57.5°	627.3	520.5	381.7	306.9	285.6
60°	571.1	464.4	326.9	258.9	237.6
62.5°	516.6	409.8	280.2	216.2	205.6
65°	460.5	352.3	232.2	186.9	182.8
67.5°	407.1	298.9	186.9	164.1	160.1
70°	351.0	246.9	154.8	141.5	136.0
72.5°	297.7	198.8	129.4	118.8	116.1
75°	245.5	152.1	106.8	97.4	96.2
77.5°	193.6	108.0	84.1	78.8	76.0
80°	145.4	77.4	64.0	58.8	58.8
82.5°	101.4	52.1	44.1	41.3	41.3
85°	57.4	29.3	25.3	25.3	25.3
87.5°	21.4	10.6	10.6	9.4	9.4
90°	2.3	28.7	47.8	60.0	64.6
92.5°	60.0	50.4	57.4	62.4	64.6
95°	155.7	76.5	93.3	105.5	103.0
97.5°	280.3	83.9	122.0	129.4	131.7
100°	424.2	95.9	136.6	155.7	160.5
102.5°	582.1	577.6	141.4	167.6	175.0
105°	728.4	800.4	146.3	172.4	182.1
107.5°	898.6	958.3	151.1	177.2	187.0
110°	1061.6	1111.7	419.4	179.8	189.2



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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	1215.0	1257.9	1217.2	184.4	191.8
115°	1377.7	1418.4	1478.5	369.0	196.6
117.5°	1519.2	1567.0	1607.9	1265.0	637.3
120°	1677.3	1713.2	1756.4	1785.2	1461.6
122.5°	1811.4	1849.7	1897.8	1912.1	1914.7
125°	1947.9	1979.3	2024.8	2041.5	2048.7
127.5°	2072.6	2106.1	2142.2	2166.1	2168.5
130°	2190.0	2228.5	2254.6	2281.1	2278.9
132.5°	2309.8	2341.1	2367.4	2389.0	2386.7
135°	2410.6	2449.0	2470.3	2494.6	2489.7
137.5°	2515.9	2544.6	2568.8	2592.7	2585.6
140°	2618.9	2638.2	2664.4	2686.0	2674.0
142.5°	2705.3	2722.1	2753.2	2772.2	2760.3
145°	2796.4	2793.8	2834.5	2851.4	2839.4
147.5°	2875.3	2868.1	2908.8	2920.8	2911.4
150°	2952.1	2935.3	2973.7	2987.9	2976.0
152.5°	3016.7	2997.6	3033.4	3048.0	3031.2
155°	3079.0	3057.6	3086.3	3100.6	3081.5
157.5°	3129.3	3110.2	3131.9	3148.7	3129.3
160°	3172.6	3158.0	3172.6	3186.8	3170.0
162.5°	3210.7	3196.5	3208.4	3225.2	3203.6
165°	3244.3	3230.0	3237.2	3253.9	3237.2
167.5°	3270.7	3256.2	3263.6	3280.4	3258.8
170°	3292.4	3277.8	3282.6	3299.5	3277.8
172.5°	3306.6	3292.4	3297.2	3314.0	3292.4
175°	3318.5	3301.7	3306.6	3323.4	3299.5
177.5°	3323.4	3306.6	3309.1	3325.9	3304.3
180°	3311.5	3311.5	3311.5	3311.5	3311.5



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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	4.31	4.96	5.47	6.10	7.71	0.28	0.93	1.44	2.07	3.68
	3H	5.97	6.56	7.14	7.71	9.32	1.46	2.04	2.62	3.19	4.81
	4H	6.57	7.13	7.75	8.28	9.90	1.90	2.46	3.07	3.60	5.23
	6H	6.99	7.50	8.17	8.65	10.28	2.21	2.72	3.39	3.88	5.51
	8H	7.11	7.59	8.29	8.76	10.39	2.30	2.79	3.48	3.95	5.58
	12H	7.16	7.62	8.35	8.79	10.43	2.34	2.80	3.52	3.96	5.61
4H	2H	4.30	4.86	5.48	6.01	7.63	0.85	1.41	2.03	2.56	4.18
	3H	6.12	6.58	7.30	7.76	9.39	2.19	2.65	3.37	3.83	5.46
	4H	6.80	7.23	7.99	8.39	10.05	2.73	3.16	3.92	4.32	5.97
	6H	7.31	7.67	8.50	8.86	10.50	3.14	3.51	4.33	4.69	6.34
	8H	7.48	7.82	8.67	9.00	10.66	3.27	3.61	4.46	4.79	6.45
	12H	7.57	7.88	8.78	9.07	10.73	3.33	3.64	4.53	4.82	6.49
8H	4H	6.76	7.10	7.95	8.28	9.93	3.00	3.34	4.19	4.52	6.18
	6H	7.32	7.60	8.53	8.82	10.47	3.51	3.79	4.72	5.01	6.67
	8H	7.54	7.78	8.75	8.98	10.65	3.71	3.95	4.92	5.15	6.82
	12H	7.67	7.88	8.88	9.08	10.78	3.82	4.03	5.04	5.23	6.93
12H	4H	6.70	7.01	7.91	8.20	9.86	3.00	3.31	4.20	4.49	6.16
	6H	7.29	7.54	8.51	8.73	10.41	3.56	3.81	4.78	5.00	6.68
	8H	7.51	7.72	8.73	8.92	10.62	3.77	3.98	4.98	5.18	6.88