

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: P929174

Luminaire Tested: DFN2DIP-HX4F0-040D120US940-RLLONL

Issue Date: 12/12/2024

**Test Information**

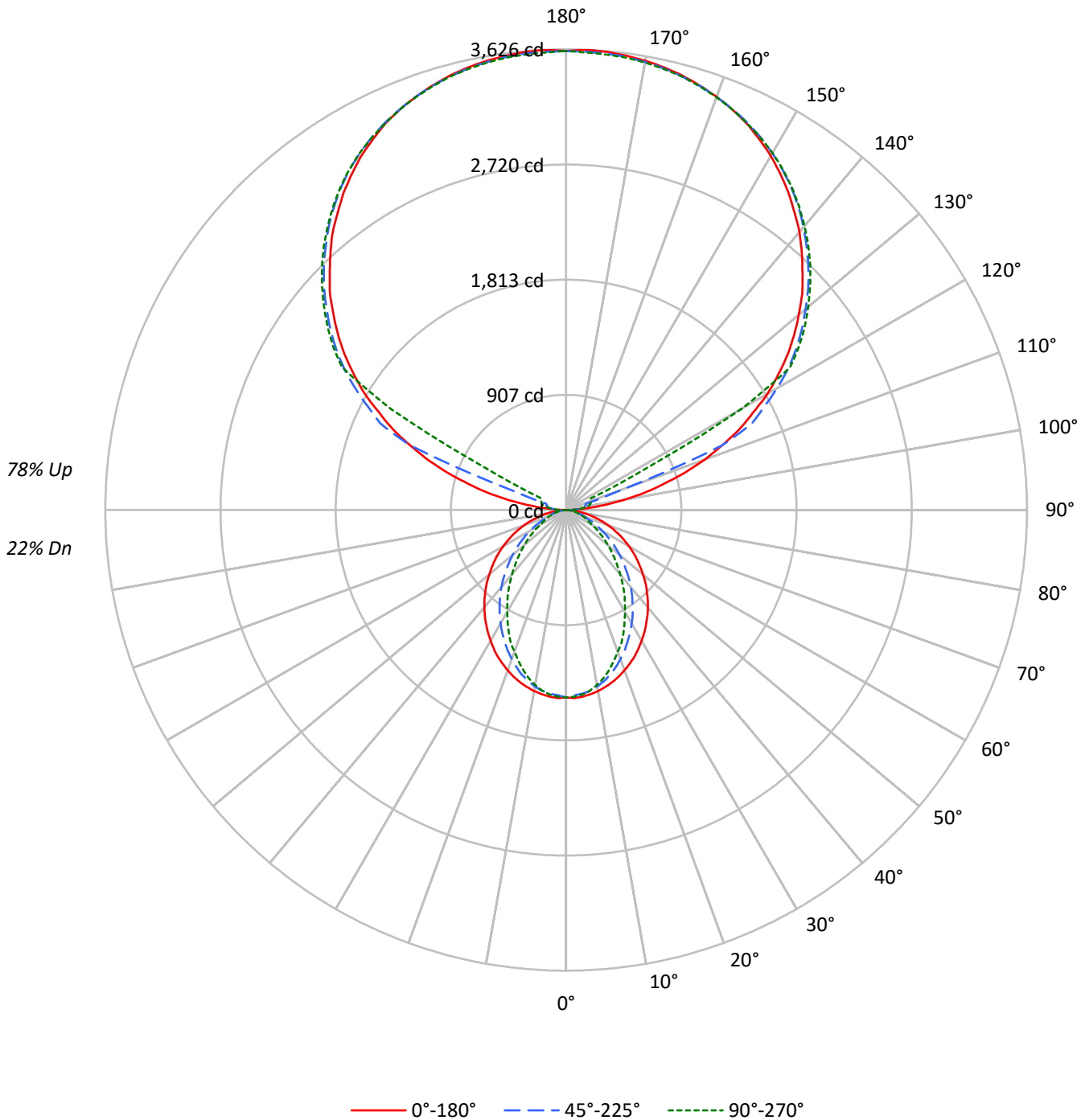
Test Method: LM-79-2019  
Report Number: P929174  
REPORT IS A COMBINATION OF REPORTS P900964 AND P896187  
Test Lab: INNOVATION CENTER  
Issue Date: 12/12/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-HX4F0-040D120US940-RLONL  
Description: 4 foot, 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: 13629.8 lumens  
Efficiency: N/A  
Efficacy: 105.5 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): 129.2  
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	
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	0
RCR																		
0	101	101	101	101	89	89	89	89	68	68	68	49	49	49	31	31	31	22
1	92	88	84	81	81	78	75	72	60	58	56	43	42	41	27	27	26	19
2	84	77	71	66	74	68	64	60	52	49	47	38	36	34	24	23	22	16
3	76	68	61	55	68	60	55	50	46	43	39	34	31	29	22	20	19	14
4	70	60	52	47	62	53	47	42	41	37	34	30	27	25	20	18	17	12
5	64	53	46	40	57	48	41	36	37	32	29	27	24	22	18	16	15	11
6	59	48	40	35	52	43	36	31	33	29	25	24	21	19	16	14	13	10
7	54	43	35	30	48	38	32	27	30	25	22	22	19	17	15	13	12	9
8	50	39	32	27	45	35	29	24	27	23	20	20	17	15	14	12	10	8
9	47	35	28	23	42	32	26	21	25	20	17	19	16	13	12	11	9	7
10	44	32	25	21	39	29	23	19	23	19	16	17	14	12	12	10	9	6

**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: 1856 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	138.2	1.0
10°-20°	379.4	2.8
20°-30°	532.7	3.9
30°-40°	580.6	4.3
40°-50°	533.7	3.9
50°-60°	419.1	3.1
60°-70°	272.8	2.0
70°-80°	140.4	1.0
80°-90°	42.2	0.3
90°-100°	119.1	0.9
100°-110°	444.1	3.3
110°-120°	1177.7	8.6
120°-130°	1953.3	14.3
130°-140°	2074.9	15.2
140°-150°	1928.4	14.1
150°-160°	1550.3	11.4
160°-170°	999.0	7.3
170°-180°	343.8	2.5
0°-30°	1050.3	7.7
0°-40°	1630.9	12.0
0°-60°	2583.7	19.0
0°-90°	3039.2	22.3
90°-120°	1740.9	12.8
90°-150°	7697.4	56.5
90°-180°	10591.0	77.7
0°-180°	13629.8	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	31	52	66	70	13
95°	170	84	102	115	112	201
105°	795	873	160	188	199	849
115°	1503	1547	1613	403	214	1480
125°	2125	2159	2209	2227	2235	1895
135°	2630	2672	2695	2721	2716	2031
145°	3051	3048	3092	3111	3098	1908
155°	3359	3336	3367	3382	3362	1548
165°	3539	3524	3531	3550	3531	1000
175°	3620	3602	3607	3626	3599	345
180°	3612	3612	3612	3612	3612	



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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°	2.5	31.3	52.2	65.5	70.5
92.5°	65.5	54.9	62.7	68.0	70.5
95°	169.7	83.5	101.8	115.2	112.4
97.5°	305.8	91.6	133.2	141.2	143.7
100°	462.8	104.6	149.0	169.7	175.1
102.5°	635.1	630.1	154.2	182.9	190.9
105°	794.6	873.2	159.6	188.1	198.6
107.5°	980.2	1045.4	164.8	193.4	203.9
110°	1158.1	1212.8	457.5	196.2	206.4



TEST NUMBER: P929174

CATALOG NUMBER: DFN2DIP-HX4F0-040D120US940-RLONL

**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°
112.5°	1325.4	1372.3	1327.9	201.1	209.2
115°	1502.9	1547.4	1612.8	402.6	214.5
117.5°	1657.2	1709.4	1754.1	1380.0	695.3
120°	1829.8	1868.9	1916.1	1947.5	1594.5
122.5°	1976.0	2018.0	2070.4	2085.9	2088.7
125°	2125.0	2159.2	2208.9	2227.1	2234.9
127.5°	2261.0	2297.6	2337.0	2363.1	2365.6
130°	2389.1	2431.1	2459.6	2488.5	2486.0
132.5°	2519.8	2554.0	2582.5	2606.2	2603.7
135°	2629.7	2671.6	2694.9	2721.3	2716.1
137.5°	2744.6	2775.9	2802.3	2828.4	2820.6
140°	2857.0	2878.0	2906.6	2930.2	2917.2
142.5°	2951.3	2969.6	3003.5	3024.2	3011.2
145°	3050.6	3047.9	3092.2	3110.6	3097.5
147.5°	3136.6	3128.9	3173.3	3186.3	3176.1
150°	3220.4	3202.1	3244.0	3259.5	3246.5
152.5°	3290.9	3270.1	3309.2	3325.0	3306.7
155°	3358.8	3335.5	3366.9	3382.5	3361.7
157.5°	3413.8	3393.0	3416.6	3434.9	3413.8
160°	3461.0	3445.2	3461.0	3476.5	3458.2
162.5°	3502.6	3487.1	3500.1	3518.4	3494.9
165°	3539.2	3523.7	3531.4	3549.8	3531.4
167.5°	3568.1	3552.2	3560.3	3578.6	3555.1
170°	3591.6	3575.8	3581.1	3599.4	3575.8
172.5°	3607.2	3591.6	3597.0	3615.3	3591.6
175°	3620.2	3601.9	3607.2	3625.5	3599.4
177.5°	3625.5	3607.2	3610.0	3628.3	3604.8
180°	3612.5	3612.5	3612.5	3612.5	3612.5



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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	4.04	4.69	5.21	5.84	7.46	0.01	0.66	1.18	1.81	3.43
	3H	5.71	6.28	6.88	7.44	9.08	1.19	1.77	2.37	2.93	4.56
	4H	6.31	6.86	7.49	8.01	9.65	1.63	2.18	2.82	3.34	4.98
	6H	6.72	7.22	7.91	8.38	10.03	1.95	2.45	3.14	3.61	5.26
	8H	6.84	7.32	8.03	8.50	10.14	2.03	2.51	3.23	3.69	5.33
	12H	6.90	7.35	8.09	8.52	10.18	2.07	2.53	3.27	3.69	5.36
4H	2H	4.04	4.59	5.23	5.74	7.38	0.59	1.14	1.78	2.29	3.93
	3H	5.85	6.31	7.05	7.49	9.14	1.92	2.38	3.12	3.56	5.21
	4H	6.54	6.96	7.73	8.13	9.80	2.47	2.89	3.66	4.06	5.73
	6H	7.04	7.40	8.24	8.60	10.25	2.88	3.24	4.08	4.43	6.09
	8H	7.22	7.55	8.41	8.74	10.41	3.00	3.34	4.20	4.52	6.20
	12H	7.30	7.61	8.52	8.80	10.48	3.06	3.37	4.27	4.56	6.24
8H	4H	6.49	6.83	7.69	8.01	9.69	2.73	3.07	3.93	4.25	5.93
	6H	7.05	7.33	8.27	8.56	10.23	3.25	3.52	4.46	4.75	6.42
	8H	7.27	7.51	8.49	8.71	10.40	3.44	3.68	4.66	4.88	6.57
	12H	7.40	7.61	8.62	8.81	10.54	3.55	3.76	4.78	4.96	6.69
12H	4H	6.44	6.74	7.65	7.93	9.61	2.73	3.03	3.94	4.23	5.91
	6H	7.03	7.27	8.25	8.47	10.16	3.30	3.54	4.52	4.74	6.43
	8H	7.24	7.45	8.47	8.65	10.38	3.50	3.71	4.72	4.91	6.63