

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: P929322

Luminaire Tested: DFN2DIP-HX4F0-090D040US940-RLLONL

Issue Date: 12/12/2024

**Test Information**

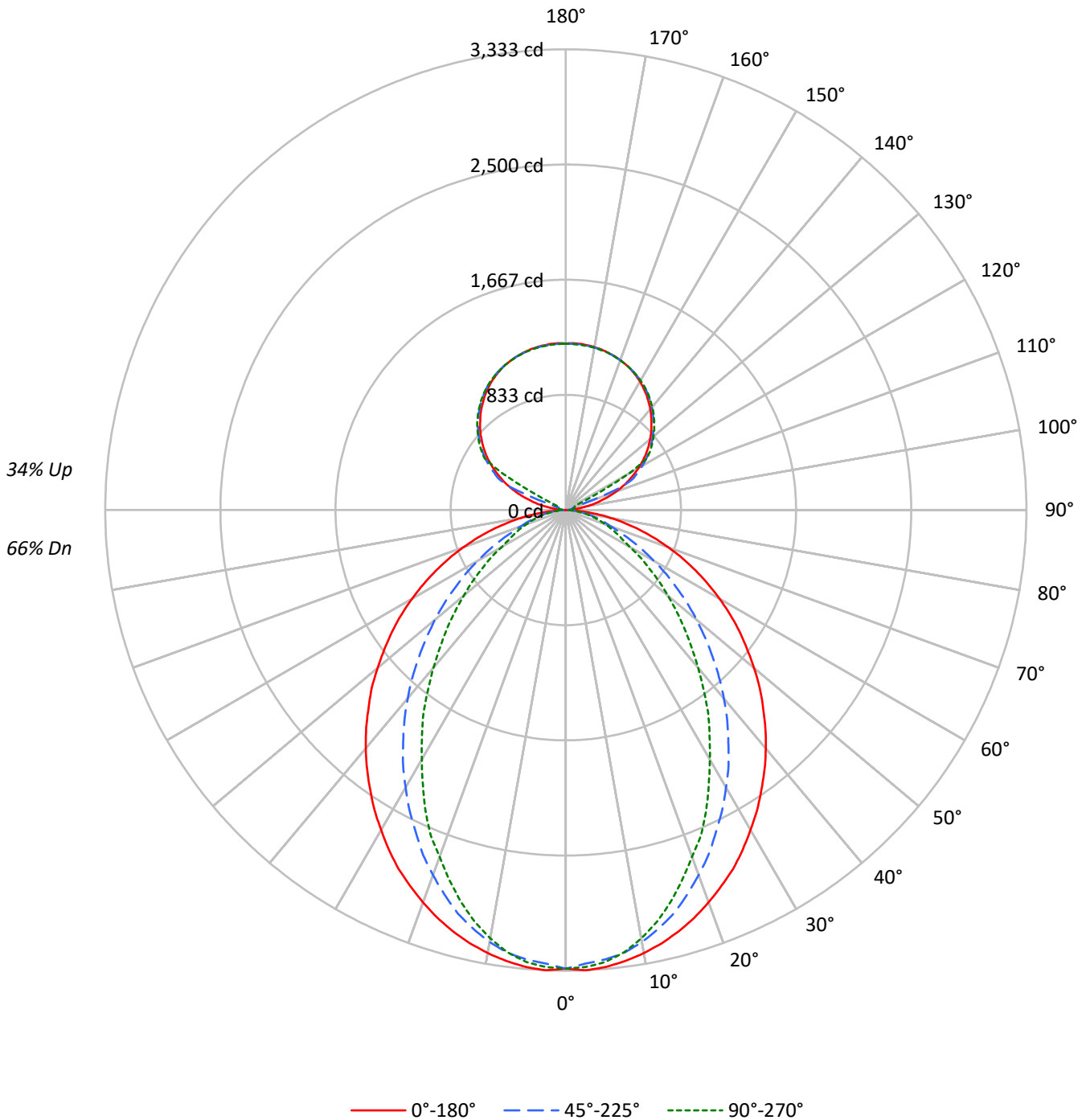
Test Method: LM-79-2019  
Report Number: P929322  
REPORT IS A COMBINATION OF REPORTS P900830 AND P896187  
Test Lab: INNOVATION CENTER  
Issue Date: 12/12/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-HX4F0-090D040US940-RLONL  
Description: 4 foot, 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: 10356.2 lumens  
Efficiency: N/A  
Efficacy: 87.2 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: Semi-Direct  
  
Input Watts (W): 118.8  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9821  
Total Harmonic Distortion (THDi): 0.08  
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	111	111	111	111	104	104	104	104	92	92	92	81	81	81	71	71	71	66				66
1	102	98	94	91	96	92	89	86	82	79	77	72	71	69	64	62	61	57				57
2	93	86	80	75	88	81	76	72	73	68	65	64	61	59	57	54	52	49				49
3	86	76	69	63	80	72	66	61	65	60	55	57	54	50	51	48	45	42				42
4	79	68	60	54	74	65	58	52	58	52	48	52	47	44	46	42	40	37				37
5	73	61	53	47	68	58	51	45	52	46	42	47	42	38	42	38	35	32				32
6	67	55	47	41	63	52	45	40	47	41	37	43	38	34	38	34	31	29				29
7	62	50	42	37	59	48	40	35	43	37	33	39	34	30	35	31	28	26				26
8	58	46	38	33	55	44	37	32	40	34	29	36	31	27	32	28	25	23				23
9	54	42	35	29	51	40	33	29	37	31	27	33	28	25	30	26	23	21				21
10	51	39	32	27	48	37	30	26	34	28	24	31	26	23	28	24	21	19				19

**AVERAGE LUMINANCE (cd/sqm):**

	0°	45°	90°
0°	2467	2467	2467
5°	2471	2428	2444
10°	2447	2381	2364
15°	2413	2302	2241
20°	2369	2194	2091
25°	2324	2073	1945
30°	2263	1948	1760
35°	2203	1814	1598
40°	2142	1676	1412
45°	2071	1522	1244
50°	1998	1367	1079
55°	1922	1201	921
60°	1833	1028	758
65°	1732	851	682
70°	1609	687	618
75°	1454	606	562
80°	1230	509	488
85°	860	341	368

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 2071 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	311.0	3.0
10°-20°	853.7	8.2
20°-30°	1198.5	11.6
30°-40°	1306.5	12.6
40°-50°	1200.8	11.6
50°-60°	943.0	9.1
60°-70°	613.8	5.9
70°-80°	316.0	3.1
80°-90°	82.8	0.8
90°-100°	39.7	0.4
100°-110°	148.0	1.4
110°-120°	392.6	3.8
120°-130°	651.1	6.3
130°-140°	691.6	6.7
140°-150°	642.8	6.2
150°-160°	516.8	5.0
160°-170°	333.0	3.2
170°-180°	114.6	1.1
0°-30°	2363.1	22.8
0°-40°	3669.6	35.4
0°-60°	5813.4	56.1
0°-90°	6825.9	65.9
90°-120°	580.3	5.6
90°-150°	2565.8	24.8
90°-180°	3530.0	34.1
0°-180°	10356.2	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	3318	3318	3318	3318	3318	
5°	3318	3303	3264	3291	3282	315
15°	3156	3123	3021	2964	2934	889
25°	2865	2768	2570	2447	2402	1317
35°	2468	2315	2051	1862	1796	1545
45°	2018	1817	1501	1288	1216	1558
55°	1534	1300	976	796	739	1371
65°	1036	793	522	420	411	1027
75°	552	342	240	219	216	584
85°	129	66	57	57	57	148
90°	1	10	17	22	24	10
95°	57	28	34	38	38	67
105°	265	291	53	63	66	283
115°	501	516	538	134	72	493
125°	708	720	736	742	745	632
135°	877	891	898	907	905	677
145°	1017	1016	1031	1037	1032	636
155°	1120	1112	1122	1128	1120	516
165°	1180	1175	1177	1183	1177	333
175°	1207	1201	1202	1208	1200	115
180°	1204	1204	1204	1204	1204	



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**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°
0°	3318.0	3318.0	3318.0	3318.0	3318.0
2.5°	3333.0	3318.0	3284.8	3315.1	3309.1
5°	3318.0	3303.0	3263.8	3290.9	3281.9
7.5°	3290.9	3273.0	3231.0	3242.8	3227.8
10°	3254.9	3233.9	3174.0	3164.7	3146.9
12.5°	3210.0	3182.9	3101.7	3083.8	3050.6
15°	3155.8	3122.7	3020.8	2963.7	2933.8
17.5°	3092.7	3044.7	2918.4	2852.5	2804.4
20°	3020.8	2960.5	2810.4	2735.6	2669.3
22.5°	2942.7	2873.6	2699.3	2597.3	2552.5
25°	2864.7	2768.4	2570.3	2447.3	2402.1
27.5°	2771.6	2669.3	2450.1	2309.0	2239.9
30°	2672.5	2558.2	2318.0	2165.1	2083.8
32.5°	2576.3	2438.0	2192.1	2011.8	1936.6
35°	2468.3	2315.1	2051.0	1861.8	1795.5
37.5°	2363.2	2197.9	1918.8	1711.4	1636.6
40°	2252.0	2072.0	1780.5	1567.4	1489.4
42.5°	2137.9	1945.9	1642.5	1420.2	1345.3
45°	2017.9	1816.6	1501.4	1288.0	1216.0
47.5°	1903.8	1690.7	1366.4	1152.9	1087.0
50°	1777.7	1564.5	1234.2	1026.8	964.0
52.5°	1654.4	1429.2	1108.0	909.8	852.8
55°	1534.2	1300.1	975.8	795.8	738.8
57.5°	1411.3	1171.1	858.9	690.7	642.6
60°	1285.1	1044.9	735.6	582.7	534.6
62.5°	1162.2	922.0	630.5	486.5	462.6
65°	1036.0	792.6	522.4	420.5	411.3
67.5°	915.9	672.5	420.5	369.2	360.3
70°	789.8	555.6	348.2	318.3	306.1
72.5°	669.6	447.2	291.1	267.2	261.3
75°	552.4	342.2	240.2	219.2	216.3
77.5°	435.5	243.1	189.2	177.2	171.1
80°	327.2	174.3	144.0	132.2	132.2
82.5°	228.1	117.2	99.1	93.0	93.0
85°	129.0	65.9	57.0	57.0	57.0
87.5°	48.1	23.9	23.9	21.1	21.1
90°	0.8	10.4	17.4	21.9	23.5
92.5°	21.9	18.3	20.9	22.7	23.5
95°	56.6	27.8	33.9	38.4	37.5
97.5°	102.0	30.5	44.4	47.1	47.9
100°	154.2	34.9	49.7	56.6	58.3
102.5°	211.7	210.1	51.4	60.9	63.6
105°	264.8	291.1	53.2	62.7	66.2
107.5°	326.7	348.5	54.9	64.5	68.0
110°	386.1	404.3	152.5	65.4	68.8



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**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°
112.5°	441.8	457.4	442.6	67.1	69.8
115°	500.9	515.8	537.6	134.2	71.5
117.5°	552.4	569.8	584.7	460.0	231.7
120°	609.9	623.0	638.7	649.2	531.5
122.5°	658.7	672.7	690.1	695.3	696.2
125°	708.3	719.8	736.3	742.4	745.0
127.5°	753.7	765.9	779.0	787.7	788.5
130°	796.4	810.4	819.8	829.5	828.7
132.5°	839.9	851.3	860.9	868.7	867.9
135°	876.6	890.6	898.3	907.1	905.4
137.5°	914.8	925.3	934.1	942.8	940.2
140°	952.3	959.3	968.9	976.7	972.4
142.5°	983.8	989.9	1001.2	1008.0	1003.8
145°	1016.9	1016.0	1030.7	1036.9	1032.5
147.5°	1045.5	1042.9	1057.7	1062.1	1058.7
150°	1073.4	1067.4	1081.4	1086.5	1082.2
152.5°	1097.0	1090.0	1103.0	1108.3	1102.2
155°	1119.6	1111.9	1122.3	1127.5	1120.5
157.5°	1137.9	1131.0	1138.9	1145.0	1137.9
160°	1153.6	1148.4	1153.6	1158.8	1152.7
162.5°	1167.5	1162.4	1166.7	1172.8	1165.0
165°	1179.8	1174.6	1177.2	1183.2	1177.2
167.5°	1189.4	1184.0	1186.8	1192.9	1185.0
170°	1197.2	1192.0	1193.7	1199.8	1192.0
172.5°	1202.4	1197.2	1199.0	1205.1	1197.2
175°	1206.7	1200.6	1202.4	1208.5	1199.8
177.5°	1208.5	1202.4	1203.3	1209.5	1201.6
180°	1204.2	1204.2	1204.2	1204.2	1204.2



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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	11.66	12.64	12.47	13.47	14.49	7.63	8.61	8.44	9.44	10.47
	3H	13.35	14.22	14.17	15.06	16.12	8.83	9.71	9.66	10.55	11.60
	4H	13.96	14.79	14.81	15.64	16.70	9.29	10.12	10.13	10.96	12.03
	6H	14.39	15.15	15.25	16.01	17.09	9.62	10.38	10.48	11.24	12.32
	8H	14.52	15.25	15.39	16.12	17.20	9.71	10.44	10.58	11.31	12.39
	12H	14.59	15.28	15.46	16.15	17.25	9.76	10.45	10.63	11.32	12.43
4H	2H	11.69	12.52	12.54	13.37	14.43	8.24	9.07	9.09	9.92	10.98
	3H	13.54	14.22	14.40	15.10	16.19	9.61	10.29	10.47	11.18	12.26
	4H	14.24	14.86	15.11	15.74	16.85	10.16	10.79	11.04	11.67	12.78
	6H	14.76	15.30	15.65	16.20	17.31	10.59	11.13	11.48	12.03	13.15
	8H	14.94	15.44	15.83	16.34	17.46	10.73	11.23	11.62	12.13	13.25
	12H	15.04	15.49	15.95	16.41	17.54	10.80	11.25	11.71	12.17	13.30
8H	4H	14.21	14.72	15.10	15.61	16.74	10.46	10.96	11.35	11.86	12.98
	6H	14.79	15.20	15.70	16.14	17.27	10.98	11.40	11.90	12.34	13.46
	8H	15.00	15.37	15.93	16.30	17.45	11.17	11.54	12.10	12.47	13.62
	12H	15.15	15.47	16.08	16.40	17.59	11.30	11.63	12.23	12.55	13.74
12H	4H	14.17	14.62	15.08	15.54	16.67	10.47	10.92	11.38	11.84	12.97
	6H	14.76	15.13	15.69	16.06	17.20	11.03	11.40	11.96	12.33	13.47
	8H	14.99	15.31	15.92	16.24	17.43	11.25	11.57	12.18	12.50	13.69