

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: P928524

Luminaire Tested: DFN2DIP-HX4F0-040D120US930-FLLONL

Issue Date: 12/12/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P928524  
REPORT IS A COMBINATION OF REPORTS P900963 AND P896187  
Test Lab: INNOVATION CENTER  
Issue Date: 12/12/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-HX4F0-040D120US930-FLONL  
Description: 4 foot, Hexagon Define Geo, with Direct Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

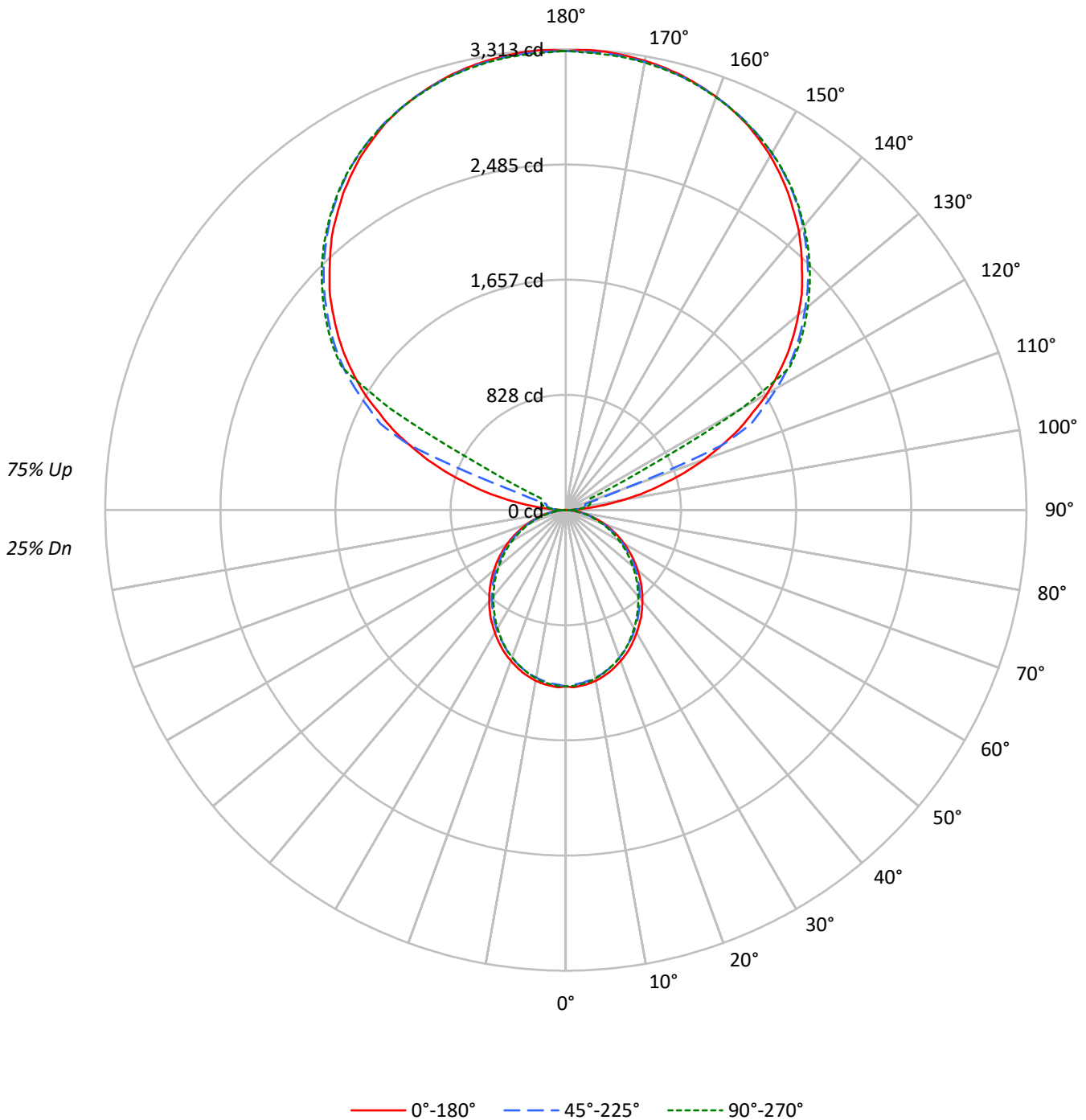
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 12909.6 lumens  
Efficiency: N/A  
Efficacy: 99.9 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: 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

TEST NUMBER: P928524  
CATALOG NUMBER: DFN2DIP-HX4F0-040D120US930-FLLONL

### 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	51	51	51	33	33	33	33	33	33	25
1	92	88	84	81	82	79	75	73	61	59	57	44	43	42	29	29	28	28	28	28	21
2	84	77	71	66	74	69	64	59	53	50	47	39	37	35	26	25	24	24	24	24	18
3	76	67	60	55	68	60	54	50	47	43	39	34	32	30	23	21	20	20	20	20	15
4	70	60	52	46	62	53	47	42	42	37	33	31	28	25	20	19	17	17	17	17	13
5	64	53	45	39	57	47	41	36	37	32	29	27	24	22	18	16	15	15	15	15	11
6	59	47	40	34	52	42	36	31	33	28	25	25	21	19	17	15	13	13	13	13	10
7	54	43	35	30	48	38	32	27	30	25	22	22	19	17	15	13	12	12	12	12	9
8	50	38	31	26	45	35	28	24	27	23	19	20	17	15	14	12	10	10	10	10	8
9	47	35	28	23	41	31	25	21	25	20	17	19	15	13	13	11	9	9	9	9	7
10	43	32	25	20	39	29	23	19	23	18	15	17	14	12	12	10	8	8	8	8	6

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

	0°	45°	90°
0°	943	943	943
5°	945	930	936
10°	937	918	924
15°	923	903	904
20°	905	882	884
25°	886	857	860
30°	863	834	831
35°	841	806	799
40°	814	778	769
45°	787	751	738
50°	758	721	703
55°	727	688	670
60°	693	648	633
65°	655	606	589
70°	606	556	541
75°	539	495	498
80°	459	418	414
85°	333	285	275

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 90°  
 Vertical Angle: 90°  
 Luminance: 1696 cd/sqm



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CATALOG NUMBER: DFN2DIP-HX4F0-040D120US930-FLONL

**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	119.4	0.9
10°-20°	335.9	2.6
20°-30°	493.7	3.8
30°-40°	573.4	4.4
40°-50°	572.7	4.4
50°-60°	499.3	3.9
60°-70°	369.1	2.9
70°-80°	208.8	1.6
80°-90°	60.9	0.5
90°-100°	108.8	0.8
100°-110°	405.7	3.1
110°-120°	1076.0	8.3
120°-130°	1784.7	13.8
130°-140°	1895.8	14.7
140°-150°	1761.9	13.6
150°-160°	1416.5	11.0
160°-170°	912.8	7.1
170°-180°	314.2	2.4
0°-30°	949.0	7.4
0°-40°	1522.3	11.8
0°-60°	2594.3	20.1
0°-90°	3233.2	25.0
90°-120°	1590.6	12.3
90°-150°	7033.0	54.5
90°-180°	9676.0	75.0
0°-180°	12909.6	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	1268	1268	1268	1268	1268	
5°	1268	1264	1250	1260	1258	120
15°	1208	1200	1184	1189	1183	340
25°	1093	1083	1062	1065	1062	503
35°	943	931	911	904	898	589
45°	767	759	740	727	722	592
55°	581	573	559	544	538	519
65°	392	384	372	361	355	387
75°	205	202	196	189	192	219
85°	50	49	48	44	43	56
90°	2	29	48	60	64	12
95°	155	76	93	105	103	184
105°	726	798	146	172	182	776
115°	1373	1414	1474	368	196	1352
125°	1942	1973	2018	2035	2042	1732
135°	2403	2441	2462	2486	2482	1856
145°	2787	2785	2825	2842	2830	1743
155°	3069	3048	3076	3090	3072	1414
165°	3234	3220	3227	3243	3227	914
175°	3308	3291	3296	3313	3289	315
180°	3301	3301	3301	3301	3301	



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**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°
0°	1268.5	1268.5	1268.5	1268.5	1268.5
2.5°	1275.9	1269.8	1256.3	1268.5	1266.2
5°	1268.5	1263.7	1250.2	1259.9	1257.6
7.5°	1259.9	1252.7	1239.2	1249.1	1246.6
10°	1246.6	1238.1	1223.5	1233.2	1229.5
12.5°	1228.2	1221.0	1206.4	1212.5	1209.9
15°	1207.5	1200.3	1184.4	1189.2	1183.2
17.5°	1181.9	1174.7	1158.8	1164.8	1158.8
20°	1153.8	1146.5	1129.5	1133.1	1128.4
22.5°	1125.8	1114.8	1098.9	1098.9	1096.5
25°	1092.8	1083.1	1062.4	1064.8	1062.4
27.5°	1056.2	1047.7	1032.0	1028.3	1022.3
30°	1019.7	1009.9	991.7	988.0	983.1
32.5°	980.7	973.4	953.9	946.5	941.6
35°	942.9	930.7	911.2	903.8	897.7
37.5°	900.2	889.2	869.6	861.1	855.0
40°	856.3	846.5	826.9	816.1	811.2
42.5°	813.6	803.8	784.4	772.0	764.8
45°	767.2	758.8	740.3	727.1	722.1
47.5°	722.1	713.5	694.1	680.6	673.4
50°	674.5	668.4	651.3	634.2	628.1
52.5°	628.1	619.6	603.8	590.4	581.8
55°	580.7	573.3	558.7	544.0	538.0
57.5°	533.0	527.0	511.0	496.4	491.5
60°	485.4	480.6	463.6	450.1	446.5
62.5°	439.1	430.6	418.4	406.2	401.3
65°	391.6	384.2	372.0	361.0	355.0
67.5°	342.8	336.6	325.8	317.2	312.3
70°	297.6	292.7	281.7	273.2	268.4
72.5°	251.3	246.4	240.3	231.8	228.1
75°	204.9	202.5	196.3	189.1	191.5
77.5°	163.4	158.5	156.1	152.4	148.8
80°	122.0	120.7	118.3	114.7	112.2
82.5°	83.0	83.0	81.8	76.9	76.9
85°	50.0	48.8	47.6	43.8	42.7
87.5°	22.0	19.6	17.1	13.4	12.1
90°	2.3	28.6	47.7	59.8	64.4
92.5°	59.8	50.2	57.3	62.1	64.4
95°	155.1	76.3	93.0	105.2	102.7
97.5°	279.4	83.7	121.7	129.0	131.3
100°	422.8	95.6	136.1	155.1	160.0
102.5°	580.3	575.7	140.9	167.1	174.4
105°	726.0	797.8	145.8	171.9	181.5
107.5°	895.6	955.2	150.6	176.7	186.3
110°	1058.1	1108.1	418.0	179.2	188.6



TEST NUMBER: P928524

CATALOG NUMBER: DFN2DIP-HX4F0-040D120US930-FLLONL

**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°
112.5°	1211.0	1253.8	1213.3	183.8	191.1
115°	1373.2	1413.8	1473.6	367.8	196.0
117.5°	1514.2	1561.9	1602.7	1260.9	635.3
120°	1671.9	1707.6	1750.7	1779.4	1456.9
122.5°	1805.5	1843.8	1891.7	1905.9	1908.4
125°	1941.6	1972.8	2018.2	2034.9	2042.0
127.5°	2065.8	2099.3	2135.3	2159.1	2161.4
130°	2182.9	2221.2	2247.3	2273.7	2271.4
132.5°	2302.3	2333.5	2359.6	2381.2	2378.9
135°	2402.7	2441.0	2462.3	2486.4	2481.6
137.5°	2507.7	2536.3	2560.4	2584.2	2577.1
140°	2610.4	2629.6	2655.7	2677.3	2665.4
142.5°	2696.5	2713.3	2744.2	2763.2	2751.3
145°	2787.3	2784.8	2825.3	2842.1	2830.1
147.5°	2865.9	2858.8	2899.4	2911.3	2901.9
150°	2942.4	2925.7	2964.0	2978.2	2966.3
152.5°	3006.8	2987.8	3023.6	3038.0	3021.3
155°	3068.9	3047.6	3076.3	3090.5	3071.5
157.5°	3119.1	3100.1	3121.7	3138.4	3119.1
160°	3162.2	3147.8	3162.2	3176.4	3159.7
162.5°	3200.3	3186.1	3198.0	3214.7	3193.2
165°	3233.7	3219.5	3226.6	3243.4	3226.6
167.5°	3260.1	3245.6	3253.0	3269.7	3248.2
170°	3281.6	3267.2	3272.0	3288.7	3267.2
172.5°	3295.8	3281.6	3286.5	3303.2	3281.6
175°	3307.7	3291.0	3295.8	3312.6	3288.7
177.5°	3312.6	3295.8	3298.4	3315.1	3293.6
180°	3300.7	3300.7	3300.7	3300.7	3300.7



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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	4.13	4.80	5.27	5.94	7.52	3.70	4.37	4.84	5.50	7.09
	3H	5.77	6.38	6.93	7.52	9.12	5.30	5.90	6.45	7.05	8.65
	4H	6.35	6.93	7.52	8.07	9.68	5.88	6.45	7.04	7.60	9.20
	6H	6.74	7.27	7.91	8.42	10.04	6.27	6.80	7.44	7.94	9.56
	8H	6.84	7.35	8.02	8.51	10.12	6.37	6.87	7.54	8.03	9.64
	12H	6.89	7.36	8.06	8.52	10.15	6.40	6.88	7.58	8.04	9.67
4H	2H	4.57	5.14	5.74	6.28	7.89	4.22	4.80	5.39	5.94	7.55
	3H	6.42	6.89	7.59	8.06	9.68	6.02	6.50	7.20	7.67	9.29
	4H	7.12	7.56	8.30	8.72	10.36	6.72	7.16	7.89	8.31	9.95
	6H	7.63	8.01	8.81	9.19	10.81	7.22	7.60	8.40	8.78	10.40
	8H	7.77	8.13	8.95	9.30	10.94	7.36	7.71	8.54	8.88	10.53
	12H	7.84	8.16	9.04	9.34	10.99	7.42	7.74	8.61	8.92	10.57
8H	4H	7.31	7.66	8.49	8.83	10.47	6.94	7.30	8.12	8.47	10.11
	6H	7.93	8.22	9.13	9.43	11.08	7.57	7.86	8.77	9.07	10.71
	8H	8.15	8.40	9.35	9.59	11.26	7.78	8.03	8.99	9.22	10.89
	12H	8.27	8.50	9.48	9.68	11.38	7.89	8.11	9.10	9.30	10.99
12H	4H	7.28	7.60	8.48	8.78	10.43	6.93	7.25	8.13	8.43	10.08
	6H	7.96	8.21	9.16	9.40	11.06	7.61	7.86	8.81	9.05	10.71
	8H	8.19	8.41	9.40	9.60	11.30	7.84	8.06	9.04	9.25	10.94