

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: P928998

Luminaire Tested: DFN2DIP-HX4F0-090D040US935-RLONL

Issue Date: 12/12/2024

**Test Information**

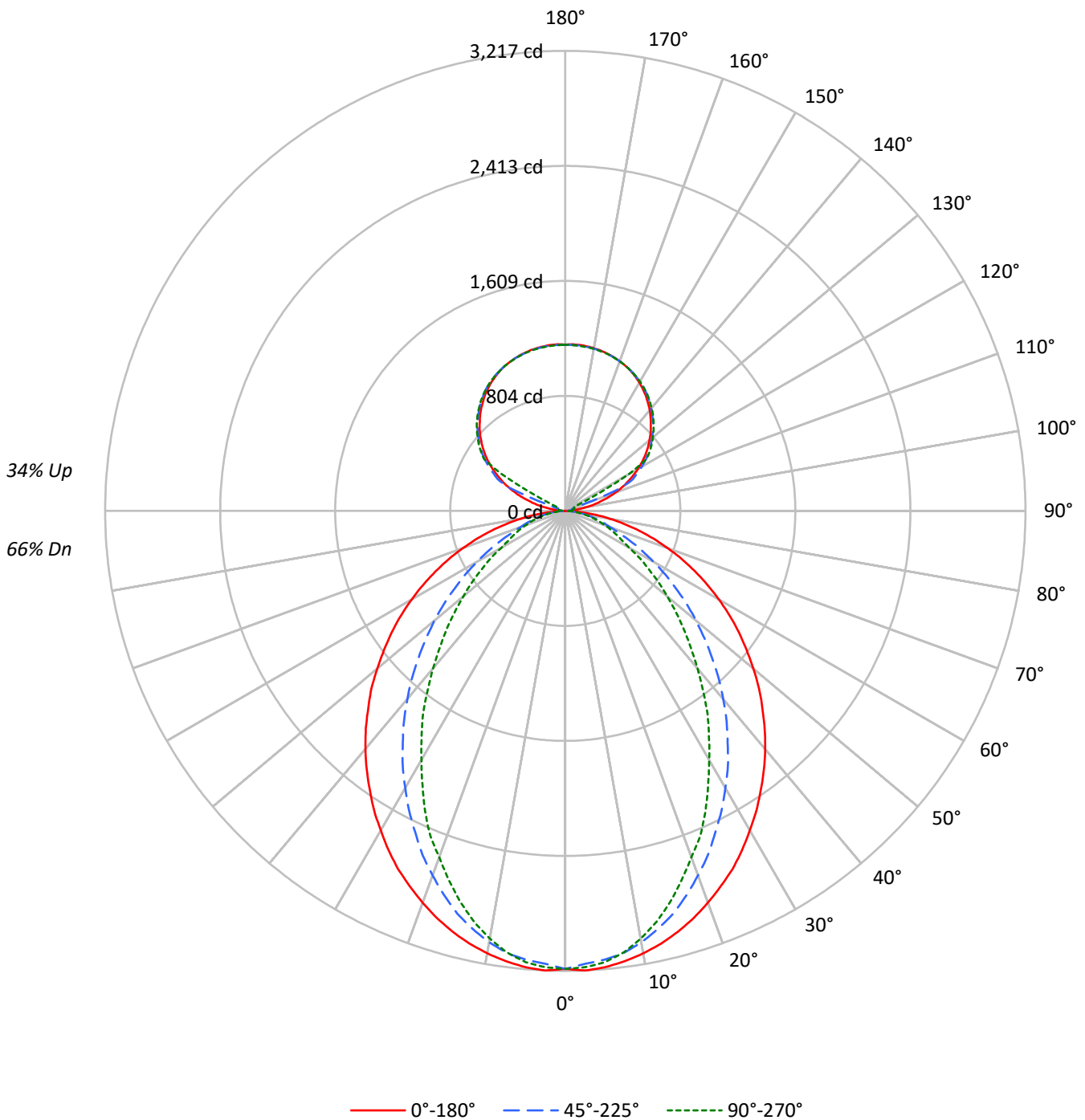
Test Method: LM-79-2019  
Report Number: P928998  
REPORT IS A COMBINATION OF REPORTS P900830 AND P896187  
Test Lab: INNOVATION CENTER  
Issue Date: 12/12/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-HX4F0-090D040US935-RLONL  
Description: 4 foot, 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: 9996.2 lumens  
Efficiency: N/A  
Efficacy: 84.1 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°	2381	2381	2381
5°	2385	2344	2359
10°	2362	2298	2282
15°	2330	2222	2164
20°	2287	2118	2018
25°	2243	2001	1878
30°	2184	1881	1699
35°	2126	1751	1543
40°	2068	1618	1363
45°	1999	1469	1200
50°	1929	1319	1041
55°	1855	1159	889
60°	1770	992	732
65°	1672	822	659
70°	1553	663	596
75°	1404	585	543
80°	1188	491	471
85°	830	329	355

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 1999 cd/sqm



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CATALOG NUMBER: DFN2DIP-HX4F0-090D040US935-RLLONL

**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	300.2	3.0
10°-20°	824.0	8.2
20°-30°	1156.9	11.6
30°-40°	1261.0	12.6
40°-50°	1159.0	11.6
50°-60°	910.3	9.1
60°-70°	592.5	5.9
70°-80°	305.0	3.1
80°-90°	79.9	0.8
90°-100°	38.3	0.4
100°-110°	142.9	1.4
110°-120°	378.9	3.8
120°-130°	628.5	6.3
130°-140°	667.6	6.7
140°-150°	620.5	6.2
150°-160°	498.8	5.0
160°-170°	321.4	3.2
170°-180°	110.6	1.1
0°-30°	2281.0	22.8
0°-40°	3542.1	35.4
0°-60°	5611.3	56.1
0°-90°	6588.7	65.9
90°-120°	560.1	5.6
90°-150°	2476.6	24.8
90°-180°	3407.0	34.1
0°-180°	9996.2	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	3203	3203	3203	3203	3203	
5°	3203	3188	3150	3176	3168	304
15°	3046	3014	2916	2861	2832	858
25°	2765	2672	2481	2362	2319	1272
35°	2383	2235	1980	1797	1733	1491
45°	1948	1753	1449	1243	1174	1504
55°	1481	1255	942	768	713	1323
65°	1000	765	504	406	397	991
75°	533	330	232	212	209	564
85°	124	64	55	55	55	143
90°	1	10	17	21	23	9
95°	55	27	33	37	36	65
105°	256	281	51	60	64	273
115°	484	498	519	130	69	476
125°	684	695	711	717	719	610
135°	846	860	867	876	874	654
145°	982	981	995	1001	997	614
155°	1081	1073	1083	1088	1082	498
165°	1139	1134	1136	1142	1136	322
175°	1165	1159	1161	1166	1158	111
180°	1162	1162	1162	1162	1162	



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**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°
0°	3202.7	3202.7	3202.7	3202.7	3202.7
2.5°	3217.1	3202.7	3170.6	3199.9	3194.1
5°	3202.7	3188.2	3150.4	3176.5	3167.9
7.5°	3176.5	3159.3	3118.7	3130.1	3115.6
10°	3141.8	3121.5	3063.7	3054.7	3037.5
12.5°	3098.4	3072.3	2993.9	2976.6	2944.6
15°	3046.1	3014.2	2915.8	2860.7	2831.8
17.5°	2985.3	2938.9	2817.0	2753.4	2707.0
20°	2915.8	2857.7	2712.8	2640.5	2576.5
22.5°	2840.4	2773.7	2605.5	2507.1	2463.8
25°	2765.1	2672.2	2481.0	2362.2	2318.6
27.5°	2675.3	2576.5	2365.0	2228.8	2162.1
30°	2579.6	2469.3	2237.4	2089.8	2011.4
32.5°	2486.7	2353.3	2115.9	1941.9	1869.3
35°	2382.6	2234.6	1979.7	1797.1	1733.1
37.5°	2281.0	2121.5	1852.1	1651.9	1579.7
40°	2173.8	2000.0	1718.6	1512.9	1437.6
42.5°	2063.6	1878.3	1585.4	1370.9	1298.6
45°	1947.8	1753.4	1449.2	1243.2	1173.7
47.5°	1837.6	1631.9	1318.9	1112.8	1049.2
50°	1715.9	1510.1	1191.3	991.1	930.5
52.5°	1596.9	1379.5	1069.5	878.2	823.2
55°	1480.9	1254.9	941.8	768.2	713.1
57.5°	1362.3	1130.4	829.1	666.7	620.3
60°	1240.4	1008.6	710.1	562.4	516.0
62.5°	1121.8	889.9	608.6	469.6	446.5
65°	1000.0	765.1	504.3	405.9	397.0
67.5°	884.1	649.1	405.9	356.4	347.8
70°	762.3	536.3	336.1	307.2	295.5
72.5°	646.4	431.7	281.0	258.0	252.2
75°	533.2	330.3	231.9	211.5	208.8
77.5°	420.3	234.6	182.6	171.0	165.1
80°	315.8	168.2	139.0	127.6	127.6
82.5°	220.2	113.1	95.7	89.8	89.8
85°	124.5	63.6	55.0	55.0	55.0
87.5°	46.4	23.1	23.1	20.3	20.3
90°	0.8	10.1	16.8	21.1	22.6
92.5°	21.1	17.7	20.1	21.9	22.6
95°	54.6	26.9	32.7	37.0	36.2
97.5°	98.4	29.4	42.9	45.5	46.2
100°	148.9	33.7	48.0	54.6	56.3
102.5°	204.3	202.8	49.6	58.8	61.4
105°	255.6	280.9	51.3	60.5	63.9
107.5°	315.4	336.4	53.0	62.3	65.6
110°	372.6	390.2	147.2	63.1	66.4



TEST NUMBER: P928998

CATALOG NUMBER: DFN2DIP-HX4F0-090D040US935-RLONL

**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°
112.5°	426.5	441.5	427.2	64.7	67.3
115°	483.5	497.8	518.9	129.5	69.1
117.5°	533.2	550.0	564.4	444.0	223.7
120°	588.8	601.3	616.5	626.6	513.1
122.5°	635.8	649.3	666.2	671.1	672.0
125°	683.7	694.7	710.7	716.6	719.1
127.5°	727.5	739.3	751.9	760.3	761.1
130°	768.7	782.2	791.3	800.6	799.9
132.5°	810.7	821.7	831.0	838.5	837.8
135°	846.1	859.6	867.1	875.6	873.9
137.5°	883.0	893.1	901.6	910.0	907.5
140°	919.2	926.0	935.2	942.8	938.6
142.5°	949.6	955.5	966.4	973.0	968.9
145°	981.5	980.7	994.9	1000.8	996.6
147.5°	1009.2	1006.7	1021.0	1025.2	1021.9
150°	1036.1	1030.3	1043.8	1048.8	1044.6
152.5°	1058.9	1052.1	1064.7	1069.8	1063.9
155°	1080.7	1073.2	1083.3	1088.3	1081.6
157.5°	1098.4	1091.7	1099.3	1105.2	1098.4
160°	1113.5	1108.5	1113.5	1118.5	1112.7
162.5°	1127.0	1122.0	1126.2	1132.0	1124.5
165°	1138.8	1133.8	1136.3	1142.1	1136.3
167.5°	1148.1	1142.9	1145.6	1151.4	1143.8
170°	1155.6	1150.6	1152.2	1158.1	1150.6
172.5°	1160.6	1155.6	1157.4	1163.2	1155.6
175°	1164.8	1158.9	1160.6	1166.5	1158.1
177.5°	1166.5	1160.6	1161.5	1167.4	1159.9
180°	1162.4	1162.4	1162.4	1162.4	1162.4



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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	11.53	12.51	12.35	13.34	14.37	7.51	8.49	8.32	9.32	10.34
	3H	13.22	14.10	14.05	14.94	16.00	8.71	9.58	9.54	10.43	11.48
	4H	13.84	14.66	14.68	15.51	16.58	9.17	9.99	10.01	10.84	11.91
	6H	14.27	15.03	15.13	15.89	16.97	9.50	10.26	10.35	11.11	12.19
	8H	14.40	15.12	15.27	16.00	17.08	9.59	10.32	10.46	11.19	12.27
	12H	14.47	15.16	15.34	16.02	17.13	9.64	10.33	10.51	11.20	12.30
4H	2H	11.57	12.40	12.42	13.24	14.31	8.12	8.95	8.97	9.80	10.86
	3H	13.41	14.10	14.27	14.98	16.06	9.49	10.17	10.35	11.05	12.14
	4H	14.11	14.74	14.98	15.62	16.72	10.04	10.66	10.91	11.54	12.65
	6H	14.64	15.17	15.52	16.08	17.19	10.47	11.01	11.36	11.91	13.02
	8H	14.81	15.32	15.71	16.21	17.34	10.60	11.11	11.49	12.00	13.13
	12H	14.92	15.37	15.83	16.29	17.42	10.68	11.13	11.59	12.04	13.17
8H	4H	14.09	14.59	14.98	15.49	16.62	10.33	10.83	11.22	11.73	12.86
	6H	14.66	15.08	15.58	16.02	17.14	10.86	11.27	11.78	12.21	13.34
	8H	14.88	15.25	15.81	16.18	17.32	11.05	11.42	11.98	12.35	13.49
	12H	15.03	15.35	15.96	16.28	17.47	11.18	11.50	12.11	12.43	13.62
12H	4H	14.05	14.50	14.96	15.42	16.55	10.34	10.80	11.25	11.71	12.84
	6H	14.64	15.01	15.57	15.94	17.08	10.91	11.28	11.84	12.21	13.35
	8H	14.87	15.19	15.80	16.12	17.31	11.13	11.45	12.06	12.38	13.57