

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: P928954

Luminaire Tested: DFN2DIP-HX4F0-070D110US935-RLONL

Issue Date: 12/12/2024

**Test Information**

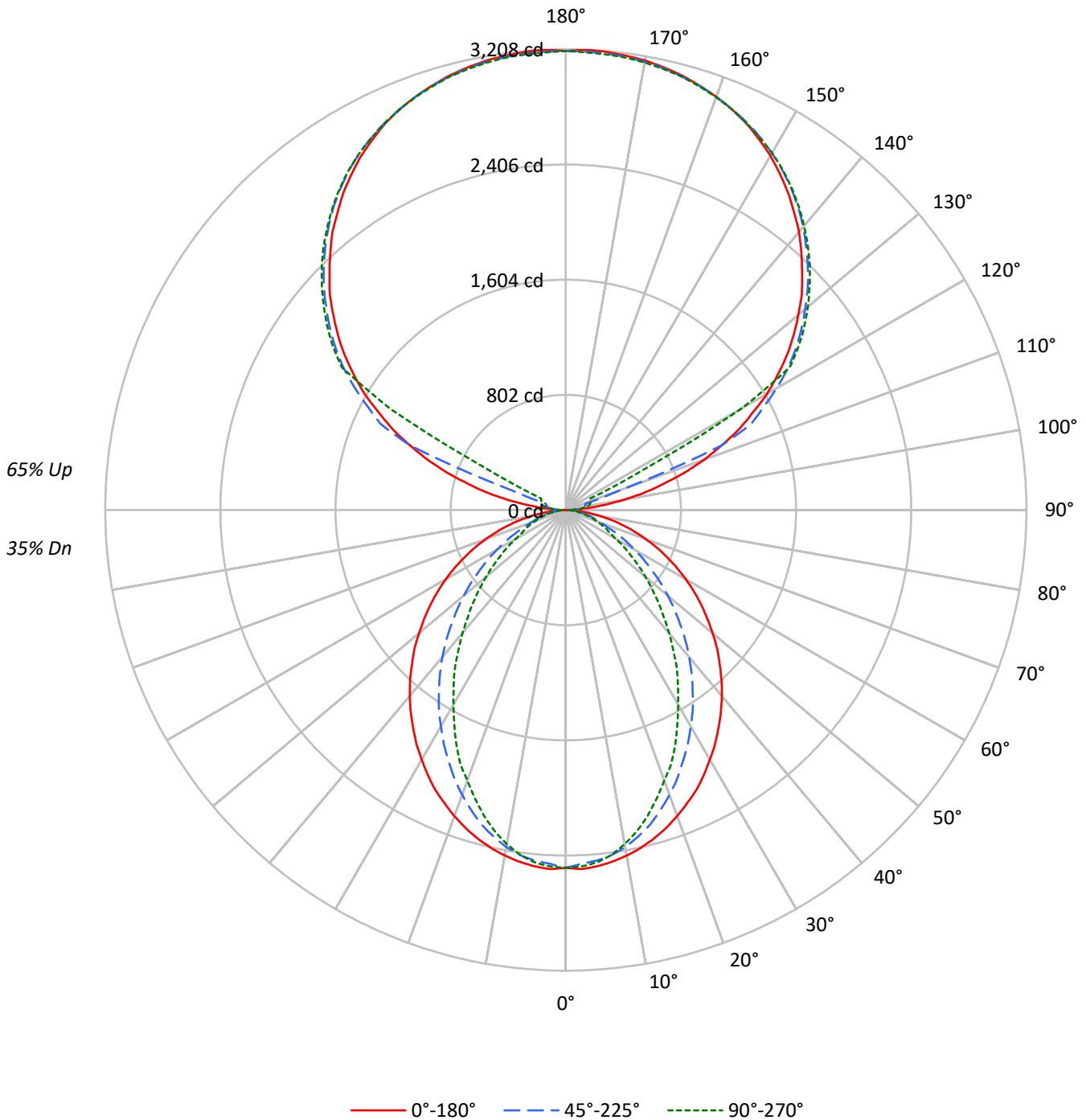
Test Method: LM-79-2019  
Report Number: P928954  
REPORT IS A COMBINATION OF REPORTS P900952 AND P896187  
Test Lab: INNOVATION CENTER  
Issue Date: 12/12/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-HX4F0-070D110US935-RLONL  
Description: 4 foot, 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: 14499.2 lumens  
Efficiency: N/A  
Efficacy: 94.5 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): 153.5  
Input Voltage (V):  
Input Current (A<sub>in</sub>): NR  
Voltage Rise (V): NR  
Power Factor: 0.9972  
Total Harmonic Distortion (THDi): 0.128  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT

TEST NUMBER: P928954  
CATALOG NUMBER: DFN2DIP-HX4F0-070D110US935-RLLONL

### Luminous Intensity Polar Plot





TEST NUMBER: P928954  
 CATALOG NUMBER: DFN2DIP-HX4F0-070D110US935-RLLONL

**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	50	30	10	0
RCR																					
0	104	104	104	104	94	94	94	94	75	75	75	58	58	58	43	43	43	43	43	43	35
1	95	91	87	84	86	82	79	76	66	64	62	52	50	49	38	37	37	37	37	37	30
2	87	80	74	69	78	72	67	63	58	55	52	46	44	41	34	33	31	31	31	31	26
3	79	70	63	58	71	64	58	53	52	48	44	41	38	35	30	29	27	27	27	27	22
4	73	62	55	49	65	57	50	45	46	42	38	36	33	31	27	25	24	24	24	24	20
5	67	56	48	42	60	51	44	39	41	37	33	33	29	27	25	23	21	21	21	21	17
6	61	50	42	37	55	46	39	34	37	32	29	30	26	24	23	20	18	18	18	18	15
7	57	45	37	32	51	41	35	30	34	29	25	27	24	21	21	18	16	16	16	16	14
8	53	41	33	28	48	37	31	26	31	26	23	25	21	19	19	17	15	15	15	15	12
9	49	37	30	25	44	34	28	24	28	24	20	23	19	17	18	15	13	13	13	13	11
10	46	34	27	23	42	31	25	21	26	21	18	21	18	15	16	14	12	12	12	12	10

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

	0°	45°	90°
0°	1852	1852	1852
5°	1855	1823	1835
10°	1837	1787	1775
15°	1812	1728	1683
20°	1779	1647	1570
25°	1745	1556	1460
30°	1699	1463	1322
35°	1654	1362	1200
40°	1608	1258	1060
45°	1555	1143	934
50°	1500	1026	810
55°	1443	902	691
60°	1376	771	569
65°	1300	639	512
70°	1208	516	464
75°	1092	455	422
80°	924	382	367
85°	646	256	276

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 90°  
 Vertical Angle: 90°  
 Luminance: 1640 cd/sqm



TEST NUMBER: P928954

CATALOG NUMBER: DFN2DIP-HX4F0-070D110US935-RLONL

**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	233.5	1.6
10°-20°	640.9	4.4
20°-30°	899.8	6.2
30°-40°	980.8	6.8
40°-50°	901.5	6.2
50°-60°	708.0	4.9
60°-70°	460.8	3.2
70°-80°	237.2	1.6
80°-90°	66.2	0.5
90°-100°	105.4	0.7
100°-110°	392.9	2.7
110°-120°	1042.0	7.2
120°-130°	1728.3	11.9
130°-140°	1835.9	12.7
140°-150°	1706.2	11.8
150°-160°	1371.8	9.5
160°-170°	883.9	6.1
170°-180°	304.2	2.1
0°-30°	1774.1	12.2
0°-40°	2754.9	19.0
0°-60°	4364.3	30.1
0°-90°	5128.5	35.4
90°-120°	1540.3	10.6
90°-150°	6810.7	47.0
90°-180°	9371.0	64.6
0°-180°	14499.2	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	2491	2491	2491	2491	2491	
5°	2491	2480	2450	2471	2464	236
15°	2369	2344	2268	2225	2202	668
25°	2151	2078	1930	1837	1803	989
35°	1853	1738	1540	1398	1348	1160
45°	1515	1364	1127	967	913	1170
55°	1152	976	732	597	555	1029
65°	778	595	392	316	309	771
75°	415	257	180	164	162	439
85°	97	50	43	43	43	111
90°	2	28	46	58	62	13
95°	150	74	90	102	99	178
105°	703	773	141	166	176	751
115°	1330	1369	1427	356	190	1309
125°	1880	1910	1954	1971	1978	1677
135°	2327	2364	2384	2408	2403	1797
145°	2699	2697	2736	2752	2741	1688
155°	2972	2951	2979	2993	2974	1370
165°	3132	3118	3125	3141	3125	885
175°	3203	3187	3192	3208	3185	305
180°	3196	3196	3196	3196	3196	



TEST NUMBER: P928954

CATALOG NUMBER: DFN2DIP-HX4F0-070D110US935-RLONL

**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°
0°	2491.0	2491.0	2491.0	2491.0	2491.0
2.5°	2502.2	2491.0	2466.1	2488.8	2484.2
5°	2491.0	2479.7	2450.3	2470.6	2463.9
7.5°	2470.6	2457.2	2425.7	2434.5	2423.3
10°	2443.6	2427.8	2382.8	2375.9	2362.5
12.5°	2409.9	2389.5	2328.6	2315.1	2290.3
15°	2369.2	2344.3	2267.8	2225.0	2202.5
17.5°	2321.9	2285.8	2191.1	2141.5	2105.4
20°	2267.8	2222.6	2110.0	2053.7	2004.0
22.5°	2209.2	2157.3	2026.4	1949.9	1916.2
25°	2150.6	2078.4	1929.6	1837.3	1803.4
27.5°	2080.8	2004.0	1839.4	1733.5	1681.6
30°	2006.4	1920.5	1740.2	1625.4	1564.4
32.5°	1934.2	1830.4	1645.7	1510.4	1453.9
35°	1853.0	1738.0	1539.8	1397.7	1348.0
37.5°	1774.2	1650.0	1440.5	1284.8	1228.6
40°	1690.7	1555.6	1336.7	1176.7	1118.1
42.5°	1605.1	1460.9	1233.1	1066.2	1010.0
45°	1514.9	1363.7	1127.2	967.0	912.9
47.5°	1429.3	1269.3	1025.8	865.6	816.1
50°	1334.6	1174.6	926.5	770.9	723.8
52.5°	1242.0	1072.9	831.8	683.0	640.2
55°	1151.8	976.0	732.5	597.4	554.7
57.5°	1059.5	879.2	644.8	518.5	482.4
60°	964.8	784.5	552.2	437.5	401.3
62.5°	872.5	692.2	473.3	365.2	347.2
65°	777.7	595.0	392.3	315.7	308.8
67.5°	687.6	504.9	315.7	277.2	270.5
70°	592.9	417.1	261.4	238.9	229.8
72.5°	502.7	335.8	218.6	200.7	196.1
75°	414.7	256.8	180.3	164.5	162.4
77.5°	326.9	182.4	142.1	132.9	128.5
80°	245.6	130.8	108.1	99.3	99.3
82.5°	171.3	88.0	74.4	69.8	69.8
85°	96.9	49.5	42.8	42.8	42.8
87.5°	36.1	17.9	17.9	15.8	15.8
90°	2.2	27.7	46.1	57.9	62.3
92.5°	57.9	48.6	55.4	60.2	62.3
95°	150.2	73.9	90.1	101.9	99.4
97.5°	270.5	81.0	117.8	124.9	127.2
100°	409.5	92.6	131.8	150.2	154.9
102.5°	561.9	557.5	136.5	161.8	168.9
105°	703.1	772.6	141.2	166.4	175.8
107.5°	867.4	925.0	145.9	171.1	180.5
110°	1024.7	1073.1	404.8	173.6	182.6



TEST NUMBER: P928954

CATALOG NUMBER: DFN2DIP-HX4F0-070D110US935-RLONL

**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°
112.5°	1172.8	1214.2	1174.9	178.0	185.1
115°	1329.8	1369.1	1427.1	356.2	189.8
117.5°	1466.4	1512.5	1552.0	1221.1	615.2
120°	1619.0	1653.6	1695.4	1723.1	1410.8
122.5°	1748.4	1785.5	1831.9	1845.6	1848.1
125°	1880.3	1910.5	1954.4	1970.6	1977.5
127.5°	2000.5	2032.9	2067.8	2090.9	2093.1
130°	2113.9	2151.0	2176.3	2201.8	2199.7
132.5°	2229.6	2259.8	2285.1	2305.9	2303.8
135°	2326.9	2363.9	2384.5	2407.9	2403.1
137.5°	2428.5	2456.2	2479.5	2502.6	2495.7
140°	2527.9	2546.5	2571.8	2592.6	2581.1
142.5°	2611.3	2627.5	2657.5	2675.9	2664.4
145°	2699.2	2696.7	2736.0	2752.3	2740.7
147.5°	2775.3	2768.5	2807.7	2819.3	2810.2
150°	2849.5	2833.3	2870.3	2884.1	2872.6
152.5°	2911.8	2893.4	2928.0	2942.0	2925.9
155°	2972.0	2951.3	2979.1	2992.8	2974.4
157.5°	3020.6	3002.1	3023.1	3039.2	3020.6
160°	3062.3	3048.3	3062.3	3076.0	3059.8
162.5°	3099.1	3085.4	3096.9	3113.1	3092.3
165°	3131.5	3117.8	3124.7	3140.8	3124.7
167.5°	3157.0	3143.1	3150.2	3166.4	3145.6
170°	3178.0	3163.9	3168.6	3184.8	3163.9
172.5°	3191.6	3178.0	3182.6	3198.8	3178.0
175°	3203.2	3187.0	3191.6	3207.9	3184.8
177.5°	3207.9	3191.6	3194.1	3210.3	3189.5
180°	3196.4	3196.4	3196.4	3196.4	3196.4



TEST NUMBER: P928954  
 CATALOG NUMBER: DFN2DIP-HX4F0-070D110US935-RLONL

**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	7.75	8.47	8.83	9.55	11.01	3.72	4.44	4.80	5.52	6.99
	3H	9.42	10.06	10.51	11.15	12.63	4.90	5.55	5.99	6.63	8.12
	4H	10.02	10.63	11.12	11.72	13.21	5.35	5.96	6.45	7.05	8.54
	6H	10.44	11.00	11.55	12.09	13.59	5.67	6.23	6.77	7.32	8.82
	8H	10.56	11.10	11.67	12.20	13.70	5.75	6.29	6.87	7.40	8.89
	12H	10.62	11.13	11.74	12.23	13.75	5.80	6.30	6.91	7.40	8.92
4H	2H	7.75	8.37	8.86	9.45	10.94	4.30	4.92	5.41	6.00	7.49
	3H	9.57	10.08	10.69	11.20	12.70	5.65	6.16	6.76	7.27	8.77
	4H	10.26	10.73	11.38	11.83	13.36	6.19	6.66	7.31	7.76	9.29
	6H	10.77	11.17	11.90	12.30	13.82	6.61	7.01	7.73	8.13	9.65
	8H	10.95	11.32	12.07	12.44	13.97	6.73	7.11	7.86	8.22	9.76
	12H	11.04	11.38	12.18	12.50	14.04	6.80	7.13	7.93	8.26	9.80
8H	4H	10.22	10.60	11.34	11.71	13.25	6.46	6.84	7.59	7.95	9.49
	6H	10.79	11.09	11.93	12.25	13.78	6.98	7.29	8.12	8.45	9.98
	8H	11.00	11.27	12.15	12.41	13.96	7.17	7.44	8.32	8.58	10.13
	12H	11.14	11.37	12.29	12.51	14.10	7.29	7.53	8.44	8.66	10.25
12H	4H	10.17	10.51	11.31	11.64	13.18	6.46	6.80	7.60	7.93	9.47
	6H	10.76	11.03	11.91	12.17	13.72	7.03	7.30	8.18	8.44	9.99
	8H	10.98	11.21	12.13	12.35	13.94	7.24	7.47	8.39	8.61	10.20