

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: P924597

Luminaire Tested: DFN2DIP-HX4F0-080D110US950-RLLFLL

Issue Date: 11/21/2024

**Test Information**

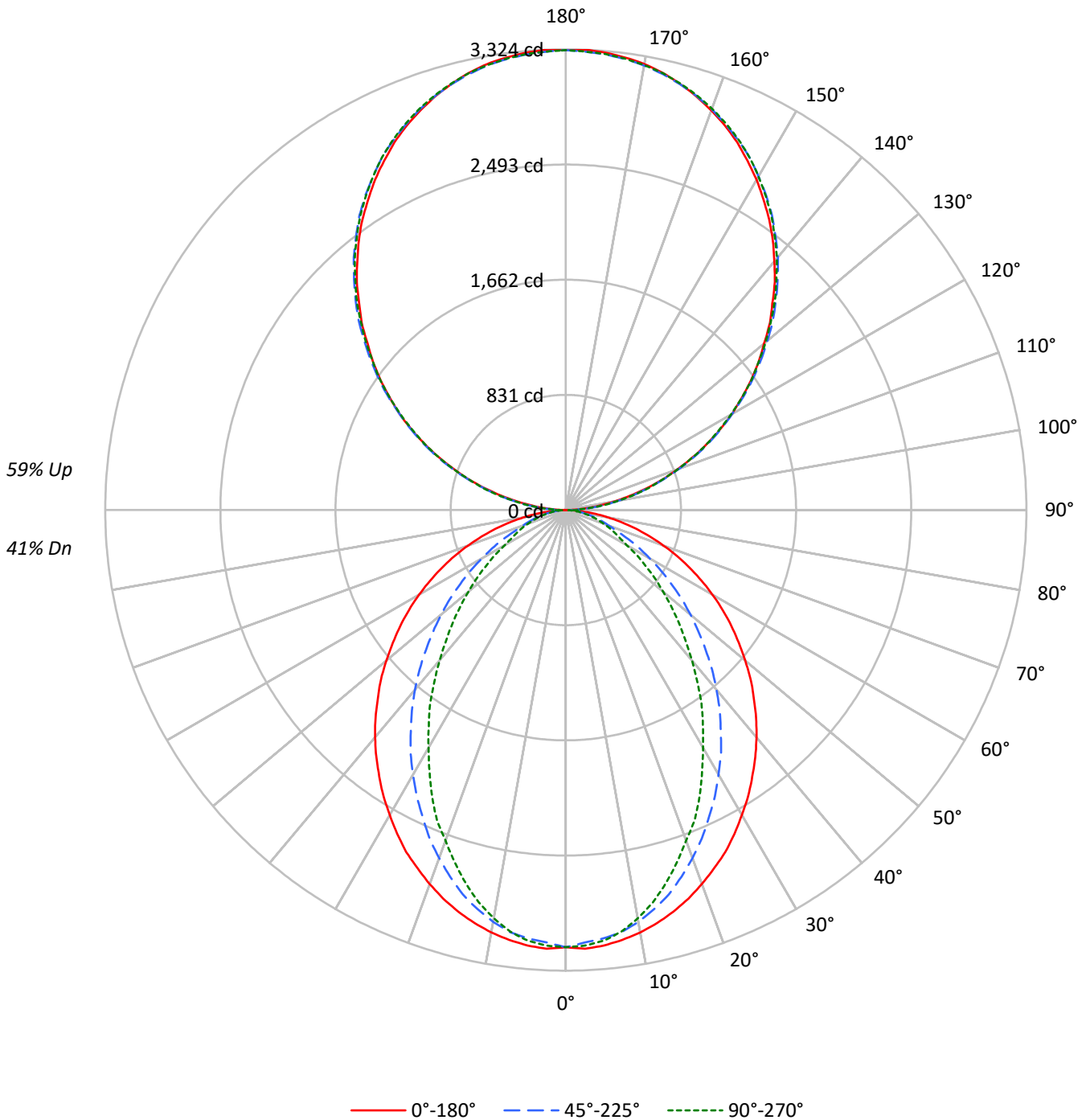
Test Method: LM-79-2019  
Report Number: P924597  
REPORT IS A COMBINATION OF REPORTS P899434 AND P896188  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-HX4F0-080D110US950-RLLFLL  
Description: 4 foot, Hexagon Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 15774.4 lumens  
Efficiency: N/A  
Efficacy: 111.2 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: General Diffuse  
  
Input Watts (W): 141.9  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9613  
Total Harmonic Distortion (THDi): 0.083  
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	50	30	10	0
RCR																					
0	105	105	105	105	96	96	96	96	78	78	78	63	63	63	48	48	48	48	48	48	41
1	96	92	88	85	88	84	81	78	69	67	65	56	54	53	43	42	41	41	41	41	35
2	88	81	75	70	80	74	69	65	61	58	55	49	47	45	38	37	35	35	35	35	30
3	80	71	64	59	73	65	59	55	54	50	46	44	41	38	34	32	31	31	31	31	26
4	74	63	56	50	67	58	52	47	48	44	40	39	36	33	31	29	27	27	27	27	23
5	68	57	49	43	62	52	45	40	43	38	34	36	32	29	28	26	23	23	23	23	20
6	63	51	43	37	57	47	40	35	39	34	30	32	28	25	26	23	21	21	21	21	18
7	58	46	38	33	53	42	36	31	36	31	27	29	26	23	23	21	19	19	19	19	16
8	54	42	34	29	49	39	32	27	33	27	24	27	23	20	22	19	17	17	17	17	14
9	50	38	31	26	46	35	29	24	30	25	21	25	21	18	20	17	15	15	15	15	13
10	47	35	28	23	43	32	26	22	28	23	19	23	19	17	19	16	14	14	14	14	12

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

	0°	45°	90°
0°	2345	2345	2345
5°	2349	2308	2323
10°	2326	2263	2248
15°	2294	2189	2131
20°	2252	2086	1988
25°	2209	1970	1849
30°	2151	1852	1674
35°	2094	1725	1519
40°	2036	1593	1342
45°	1969	1447	1182
50°	1899	1300	1026
55°	1827	1142	875
60°	1743	977	721
65°	1646	809	648
70°	1529	653	587
75°	1383	576	535
80°	1169	484	464
85°	818	324	350

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 90°  
 Vertical Angle: 90°  
 Luminance: 2501 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	295.6	1.9
10°-20°	811.5	5.1
20°-30°	1139.4	7.2
30°-40°	1242.0	7.9
40°-50°	1141.5	7.2
50°-60°	896.5	5.7
60°-70°	583.5	3.7
70°-80°	300.4	1.9
80°-90°	86.1	0.5
90°-100°	205.4	1.3
100°-110°	652.5	4.1
110°-120°	1116.7	7.1
120°-130°	1468.6	9.3
130°-140°	1648.4	10.5
140°-150°	1616.5	10.2
150°-160°	1356.0	8.6
160°-170°	899.3	5.7
170°-180°	314.3	2.0
0°-30°	2246.6	14.2
0°-40°	3488.6	22.1
0°-60°	5526.6	35.0
0°-90°	6496.6	41.2
90°-120°	1974.6	12.5
90°-150°	6708.2	42.5
90°-180°	9278.0	58.8
0°-180°	15774.4	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	3154	3154	3154	3154	3154	
5°	3154	3140	3103	3128	3120	299
15°	3000	2969	2872	2818	2789	845
25°	2723	2632	2444	2327	2284	1252
35°	2347	2201	1950	1770	1707	1469
45°	1918	1727	1427	1224	1156	1481
55°	1459	1236	928	756	702	1303
65°	985	754	497	400	391	976
75°	525	325	228	208	206	555
85°	123	63	54	54	54	141
90°	3	36	98	92	95	16
95°	146	174	179	179	174	163
105°	602	610	616	621	621	636
115°	1121	1137	1132	1129	1121	1108
125°	1630	1655	1647	1638	1635	1457
135°	2108	2139	2145	2142	2134	1630
145°	2559	2579	2596	2598	2587	1599
155°	2927	2935	2944	2958	2949	1347
165°	3184	3181	3181	3201	3187	898
175°	3313	3305	3299	3319	3302	315
180°	3319	3319	3319	3319	3319	



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**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°
0°	3154.3	3154.3	3154.3	3154.3	3154.3
2.5°	3168.5	3154.3	3122.8	3151.5	3145.8
5°	3154.3	3140.1	3102.8	3128.5	3120.1
7.5°	3128.5	3111.6	3071.6	3082.9	3068.5
10°	3094.3	3074.4	3017.4	3008.6	2991.6
12.5°	3051.7	3025.9	2948.6	2931.6	2900.2
15°	3000.1	2968.7	2871.7	2817.5	2789.0
17.5°	2940.1	2894.4	2774.5	2711.8	2666.0
20°	2871.7	2814.5	2671.9	2600.7	2537.6
22.5°	2797.5	2731.8	2566.2	2469.2	2426.5
25°	2723.3	2631.9	2443.5	2326.6	2283.6
27.5°	2634.9	2537.6	2329.3	2195.2	2129.4
30°	2540.7	2431.9	2203.6	2058.3	1981.0
32.5°	2449.2	2317.8	2084.0	1912.6	1841.1
35°	2346.6	2200.9	1949.8	1770.0	1706.9
37.5°	2246.6	2089.5	1824.1	1627.0	1555.8
40°	2141.0	1969.8	1692.7	1490.1	1415.8
42.5°	2032.5	1849.9	1561.5	1350.2	1278.9
45°	1918.3	1726.9	1427.4	1224.5	1156.1
47.5°	1809.9	1607.3	1299.0	1096.1	1033.4
50°	1689.9	1487.4	1173.3	976.1	916.4
52.5°	1572.8	1358.6	1053.3	865.0	810.8
55°	1458.6	1236.0	927.7	756.5	702.3
57.5°	1341.7	1113.3	816.5	656.6	610.8
60°	1221.7	993.4	699.3	553.9	508.2
62.5°	1104.8	876.4	599.4	462.5	439.8
65°	984.9	753.5	496.7	399.8	390.9
67.5°	870.7	639.4	399.8	351.0	342.6
70°	750.8	528.2	331.0	302.5	291.1
72.5°	636.6	425.2	276.9	254.1	248.3
75°	525.2	325.3	228.4	208.4	205.7
77.5°	414.0	231.1	179.9	168.4	162.7
80°	311.0	165.7	136.9	125.6	125.6
82.5°	216.8	111.4	94.2	88.4	88.4
85°	122.7	62.7	54.2	54.2	54.2
87.5°	45.7	22.7	22.7	20.0	20.0
90°	3.0	36.1	98.1	92.1	95.0
92.5°	62.0	84.0	87.0	90.1	90.1
95°	146.1	174.1	179.1	179.1	174.1
97.5°	243.2	269.1	280.2	280.2	280.2
100°	355.2	378.2	386.2	386.2	383.2
102.5°	473.3	490.3	501.3	504.3	501.3
105°	602.4	610.4	616.4	621.3	621.3
107.5°	730.4	742.4	742.4	744.4	730.4
110°	854.5	870.5	870.5	870.5	862.5



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**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°
112.5°	988.5	1005.5	1002.6	994.5	988.5
115°	1120.7	1136.6	1131.6	1128.7	1120.7
117.5°	1251.7	1273.7	1259.7	1251.7	1243.7
120°	1383.8	1405.8	1383.8	1383.8	1374.8
122.5°	1503.9	1531.8	1517.8	1509.8	1503.9
125°	1629.9	1654.9	1646.9	1637.9	1634.9
127.5°	1753.0	1784.0	1773.0	1761.0	1753.0
130°	1868.0	1904.1	1899.0	1893.0	1882.1
132.5°	1997.1	2025.2	2027.2	2013.1	2005.1
135°	2108.1	2139.2	2145.2	2142.2	2134.2
137.5°	2232.3	2257.3	2262.2	2260.2	2248.3
140°	2341.3	2366.3	2380.3	2380.3	2369.4
142.5°	2453.4	2478.4	2486.4	2489.4	2478.4
145°	2559.4	2579.4	2595.5	2598.4	2587.4
147.5°	2654.5	2679.5	2691.5	2696.5	2685.5
150°	2752.6	2769.6	2780.5	2789.6	2780.5
152.5°	2839.6	2856.6	2870.6	2881.7	2870.6
155°	2926.7	2934.6	2943.7	2957.7	2948.6
157.5°	3001.7	3007.7	3012.6	3032.7	3018.6
160°	3068.7	3074.7	3077.7	3094.8	3082.8
162.5°	3130.7	3130.7	3133.8	3152.8	3138.8
165°	3183.8	3180.7	3180.7	3200.8	3186.7
167.5°	3231.8	3222.8	3222.8	3242.8	3228.8
170°	3267.8	3259.8	3256.9	3276.8	3259.8
172.5°	3292.8	3284.8	3281.9	3301.9	3284.8
175°	3312.9	3304.8	3298.8	3318.9	3301.9
177.5°	3323.8	3315.8	3309.8	3326.9	3309.8
180°	3318.9	3318.9	3318.9	3318.9	3318.9



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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	9.23	9.99	10.26	11.03	12.42	5.20	5.96	6.23	7.00	8.39
	3H	10.90	11.58	11.94	12.63	14.04	6.38	7.07	7.43	8.11	9.53
	4H	11.50	12.15	12.56	13.20	14.62	6.83	7.48	7.89	8.53	9.95
	6H	11.92	12.52	12.99	13.57	15.00	7.15	7.75	8.22	8.80	10.23
	8H	12.05	12.61	13.12	13.68	15.11	7.24	7.81	8.31	8.87	10.30
	12H	12.11	12.65	13.18	13.71	15.16	7.28	7.82	8.36	8.88	10.33
4H	2H	9.24	9.88	10.30	10.93	12.35	5.79	6.43	6.85	7.48	8.90
	3H	11.06	11.60	12.13	12.67	14.11	7.13	7.67	8.20	8.75	10.18
	4H	11.75	12.24	12.83	13.31	14.77	7.68	8.17	8.76	9.24	10.69
	6H	12.26	12.68	13.35	13.78	15.23	8.10	8.52	9.18	9.61	11.06
	8H	12.44	12.83	13.52	13.91	15.38	8.22	8.62	9.31	9.70	11.17
	12H	12.53	12.89	13.63	13.98	15.45	8.29	8.64	9.39	9.74	11.21
8H	4H	11.71	12.11	12.80	13.19	14.66	7.95	8.35	9.04	9.43	10.90
	6H	12.28	12.60	13.39	13.73	15.19	8.47	8.80	9.58	9.92	11.38
	8H	12.50	12.78	13.61	13.89	15.37	8.66	8.95	9.78	10.06	11.54
	12H	12.63	12.88	13.75	13.99	15.51	8.78	9.03	9.90	10.14	11.66
12H	4H	11.66	12.02	12.76	13.11	14.58	7.96	8.31	9.06	9.41	10.88
	6H	12.25	12.54	13.37	13.65	15.13	8.52	8.81	9.64	9.91	11.40
	8H	12.47	12.72	13.59	13.83	15.35	8.73	8.98	9.85	10.08	11.60