

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: P905482

Luminaire Tested: DFN2DIP-HX4F0-070D110US835-FLLFLL

Issue Date: 11/21/2024

**Test Information**

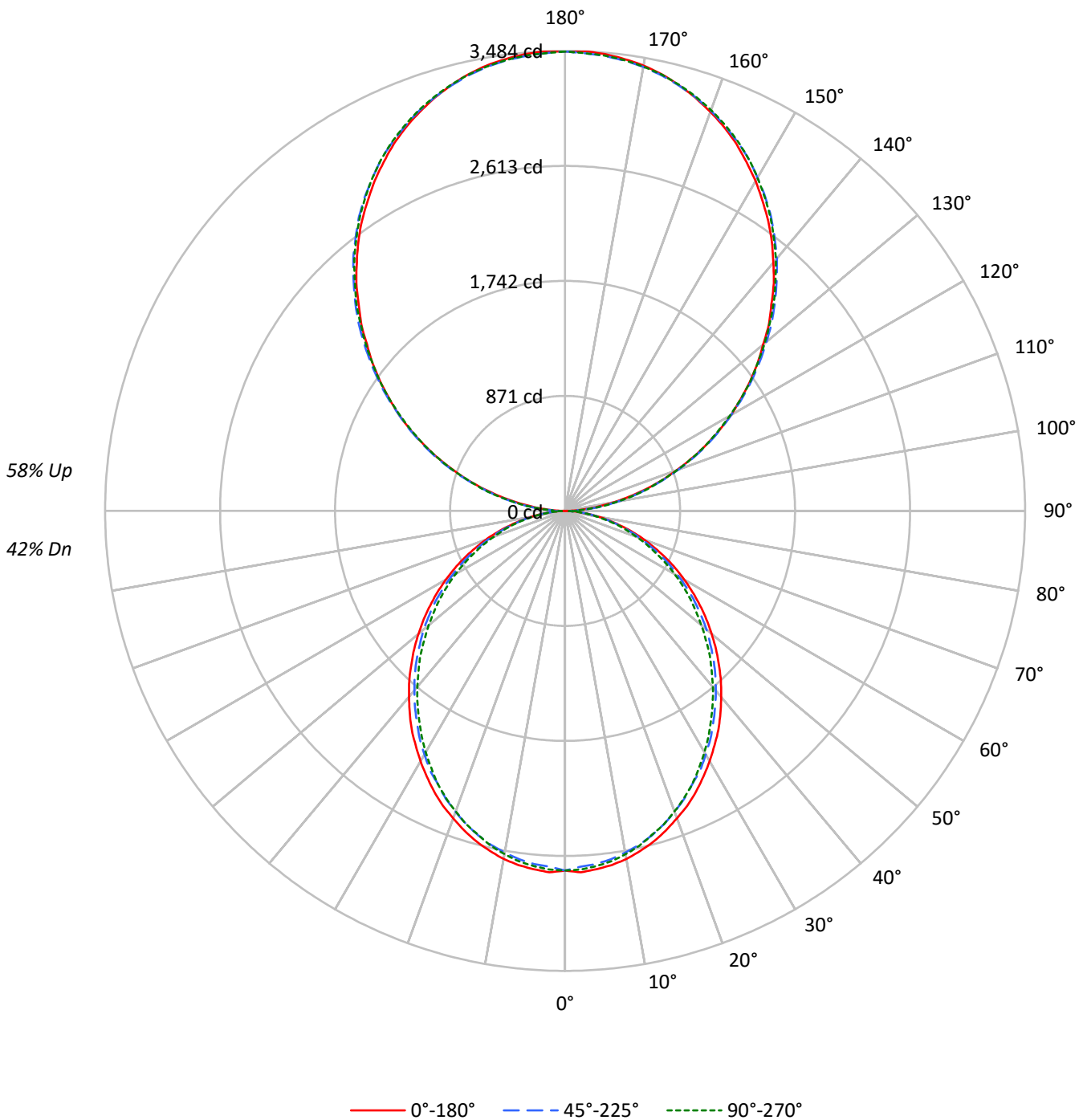
Test Method: LM-79-2019  
Report Number: P905482  
REPORT IS A COMBINATION OF REPORTS P899431 AND P896188  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-HX4F0-070D110US835-FLLFLL  
Description: 4 foot, Hexagon Define Geo, with Direct Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 16665.0 lumens  
Efficiency: N/A  
Efficacy: 126.7 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: General Diffuse  
  
Input Watts (W): 131.5  
Input Voltage (V):  
Input Current (Ain): 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

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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	105	105	105	105	96	96	96	96	79	79	79	63	63	63	48	48	48	48	48	48	42
1	96	92	88	84	87	84	80	78	69	67	65	55	54	52	43	42	41	41	41	41	35
2	87	80	74	69	79	73	68	64	60	57	53	49	46	44	38	36	34	34	34	34	29
3	80	70	63	57	72	64	58	53	53	49	45	43	40	37	33	31	29	29	29	29	25
4	73	62	54	48	66	57	50	45	47	42	38	38	35	32	30	27	25	25	25	25	21
5	67	55	47	41	61	51	44	39	42	37	33	34	30	27	27	24	22	22	22	22	19
6	61	50	42	36	56	46	39	33	38	33	29	31	27	24	24	22	19	19	19	19	16
7	57	45	37	31	52	41	34	29	34	29	25	28	24	21	22	19	17	17	17	17	14
8	53	41	33	28	48	37	31	26	31	26	22	26	22	19	20	18	15	15	15	15	13
9	49	37	30	25	45	34	28	23	29	24	20	24	20	17	19	16	14	14	14	14	12
10	46	34	27	22	42	31	25	21	26	21	18	22	18	15	17	15	13	13	13	13	11

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

	0°	45°	90°
0°	2025	2025	2025
5°	2029	1997	2011
10°	2012	1971	1983
15°	1983	1938	1941
20°	1943	1893	1898
25°	1904	1840	1847
30°	1854	1790	1783
35°	1807	1731	1716
40°	1749	1671	1651
45°	1691	1612	1586
50°	1628	1549	1509
55°	1562	1477	1439
60°	1487	1391	1359
65°	1406	1302	1264
70°	1302	1193	1163
75°	1158	1063	1069
80°	985	898	889
85°	715	612	591

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 90°  
 Vertical Angle: 90°  
 Luminance: 2622 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	256.4	1.5
10°-20°	721.3	4.3
20°-30°	1060.0	6.4
30°-40°	1231.1	7.4
40°-50°	1229.6	7.4
50°-60°	1072.2	6.4
60°-70°	792.6	4.8
70°-80°	448.4	2.7
80°-90°	128.3	0.8
90°-100°	215.3	1.3
100°-110°	684.0	4.1
110°-120°	1170.5	7.0
120°-130°	1539.4	9.2
130°-140°	1727.9	10.4
140°-150°	1694.4	10.2
150°-160°	1421.4	8.5
160°-170°	942.6	5.7
170°-180°	329.5	2.0
0°-30°	2037.7	12.2
0°-40°	3268.8	19.6
0°-60°	5570.6	33.4
0°-90°	6939.9	41.6
90°-120°	2069.8	12.4
90°-150°	7031.6	42.2
90°-180°	9725.0	58.4
0°-180°	16665.0	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	2724	2724	2724	2724	2724	
5°	2724	2714	2685	2705	2700	259
15°	2593	2577	2543	2554	2541	730
25°	2347	2326	2281	2286	2281	1080
35°	2025	1998	1956	1941	1928	1264
45°	1648	1629	1590	1561	1550	1271
55°	1247	1231	1200	1168	1155	1115
65°	841	825	799	775	762	831
75°	440	435	422	406	411	470
85°	107	105	102	94	92	120
90°	3	38	103	96	100	16
95°	153	182	188	188	182	170
105°	631	640	646	651	651	666
115°	1175	1191	1186	1183	1175	1162
125°	1708	1735	1726	1717	1714	1527
135°	2210	2242	2249	2246	2237	1708
145°	2683	2704	2721	2724	2712	1676
155°	3068	3076	3086	3100	3091	1412
165°	3337	3334	3334	3355	3340	941
175°	3473	3464	3458	3479	3461	330
180°	3479	3479	3479	3479	3479	



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**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°
0°	2723.7	2723.7	2723.7	2723.7	2723.7
2.5°	2739.6	2726.5	2697.6	2723.7	2718.7
5°	2723.7	2713.5	2684.6	2705.4	2700.4
7.5°	2705.4	2689.8	2660.9	2682.1	2676.8
10°	2676.8	2658.4	2627.0	2647.9	2640.1
12.5°	2637.3	2621.8	2590.4	2603.4	2598.1
15°	2592.9	2577.3	2543.1	2553.7	2540.6
17.5°	2537.8	2522.3	2488.1	2501.2	2488.1
20°	2477.5	2462.0	2425.3	2433.1	2422.8
22.5°	2417.5	2393.9	2359.7	2359.7	2354.4
25°	2346.7	2325.8	2281.4	2286.4	2281.4
27.5°	2268.0	2249.7	2215.8	2208.0	2194.9
30°	2189.7	2168.5	2129.4	2121.6	2111.0
32.5°	2105.7	2090.2	2048.2	2032.4	2021.8
35°	2024.6	1998.5	1956.5	1940.7	1927.6
37.5°	1932.9	1909.3	1867.3	1849.0	1835.9
40°	1838.7	1817.6	1775.6	1752.3	1741.7
42.5°	1747.0	1725.9	1684.2	1657.8	1642.2
45°	1647.5	1629.2	1589.7	1561.1	1550.5
47.5°	1550.5	1532.2	1490.2	1461.3	1445.8
50°	1448.3	1435.2	1398.5	1361.9	1348.8
52.5°	1348.8	1330.5	1296.6	1267.7	1249.3
55°	1246.8	1231.0	1199.6	1168.2	1155.1
57.5°	1144.6	1131.5	1097.3	1065.9	1055.4
60°	1042.3	1032.0	995.4	966.5	958.7
62.5°	942.8	924.5	898.4	872.3	861.7
65°	840.9	825.0	798.9	775.3	762.2
67.5°	736.1	722.8	699.4	681.1	670.5
70°	639.1	628.6	604.9	586.6	576.3
72.5°	539.6	529.1	516.0	497.7	489.9
75°	439.9	434.9	421.5	406.0	411.3
77.5°	351.0	340.4	335.1	327.3	319.6
80°	262.0	259.3	254.0	246.2	240.9
82.5°	178.1	178.1	175.6	165.1	165.1
85°	107.3	104.8	102.3	94.2	91.7
87.5°	47.2	42.0	36.7	28.9	26.1
90°	3.1	37.8	102.8	96.5	99.6
92.5°	65.0	88.1	91.2	94.4	94.4
95°	153.1	182.5	187.7	187.7	182.5
97.5°	254.9	282.1	293.7	293.7	293.7
100°	372.3	396.4	404.8	404.8	401.7
102.5°	496.1	513.9	525.5	528.6	525.5
105°	631.4	639.8	646.1	651.3	651.3
107.5°	765.6	778.2	778.2	780.3	765.6
110°	895.7	912.5	912.5	912.5	904.1



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**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°
112.5°	1036.2	1054.0	1050.9	1042.5	1036.2
115°	1174.7	1191.4	1186.2	1183.1	1174.7
117.5°	1312.1	1335.1	1320.4	1312.1	1303.7
120°	1450.5	1473.6	1450.5	1450.5	1441.1
122.5°	1576.4	1605.7	1591.0	1582.6	1576.4
125°	1708.5	1734.7	1726.3	1716.9	1713.7
127.5°	1837.5	1870.0	1858.5	1845.9	1837.5
130°	1958.1	1995.9	1990.6	1984.3	1972.8
132.5°	2093.4	2122.8	2124.9	2110.2	2101.8
135°	2209.8	2242.3	2248.6	2245.5	2237.1
137.5°	2339.9	2366.1	2371.3	2369.2	2356.7
140°	2454.2	2480.4	2495.1	2495.1	2483.6
142.5°	2571.7	2597.9	2606.3	2609.4	2597.9
145°	2682.8	2703.8	2720.6	2723.7	2712.2
147.5°	2782.5	2808.7	2821.3	2826.5	2815.0
150°	2885.3	2903.1	2914.6	2924.1	2914.6
152.5°	2976.5	2994.3	3009.0	3020.6	3009.0
155°	3067.8	3076.1	3085.6	3100.3	3090.8
157.5°	3146.4	3152.7	3157.9	3178.9	3164.2
160°	3216.7	3223.0	3226.1	3244.0	3231.4
162.5°	3281.7	3281.7	3284.9	3304.8	3290.1
165°	3337.3	3334.1	3334.1	3355.1	3340.4
167.5°	3387.6	3378.2	3378.2	3399.2	3384.5
170°	3425.4	3417.0	3413.9	3434.8	3417.0
172.5°	3451.6	3443.2	3440.1	3461.1	3443.2
175°	3472.6	3464.2	3457.9	3478.9	3461.1
177.5°	3484.1	3475.7	3469.4	3487.3	3469.4
180°	3478.9	3478.9	3478.9	3478.9	3478.9



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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	8.90	9.69	9.92	10.72	12.11	8.47	9.26	9.49	10.29	11.68
	3H	10.55	11.26	11.59	12.30	13.71	10.08	10.79	11.12	11.83	13.24
	4H	11.14	11.81	12.19	12.86	14.27	10.66	11.34	11.71	12.38	13.79
	6H	11.54	12.15	12.59	13.20	14.63	11.06	11.68	12.12	12.73	14.15
	8H	11.64	12.23	12.70	13.29	14.71	11.16	11.75	12.23	12.82	14.24
	12H	11.68	12.24	12.75	13.30	14.75	11.20	11.76	12.27	12.82	14.27
4H	2H	9.35	10.02	10.41	11.07	12.48	9.01	9.68	10.06	10.72	12.14
	3H	11.21	11.77	12.27	12.85	14.27	10.82	11.38	11.88	12.45	13.88
	4H	11.92	12.44	12.99	13.50	14.95	11.52	12.03	12.59	13.10	14.54
	6H	12.44	12.88	13.51	13.96	15.41	12.03	12.47	13.10	13.55	15.00
	8H	12.58	13.00	13.66	14.08	15.53	12.17	12.58	13.25	13.66	15.12
	12H	12.65	13.03	13.75	14.12	15.58	12.23	12.61	13.33	13.70	15.16
8H	4H	12.12	12.53	13.19	13.61	15.06	11.76	12.17	12.83	13.25	14.70
	6H	12.75	13.09	13.85	14.21	15.66	12.38	12.72	13.48	13.84	15.30
	8H	12.97	13.27	14.07	14.37	15.84	12.60	12.90	13.70	14.00	15.47
	12H	13.10	13.36	14.21	14.46	15.97	12.71	12.97	13.82	14.07	15.59
12H	4H	12.10	12.47	13.19	13.56	15.03	11.75	12.12	12.84	13.21	14.67
	6H	12.77	13.07	13.88	14.18	15.65	12.42	12.72	13.53	13.83	15.30
	8H	13.01	13.28	14.13	14.38	15.89	12.66	12.92	13.77	14.02	15.53