

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: P927752

Luminaire Tested: DFN2DIP-HX4F0-100D080US840-FLLONL

Issue Date: 12/12/2024

**Test Information**

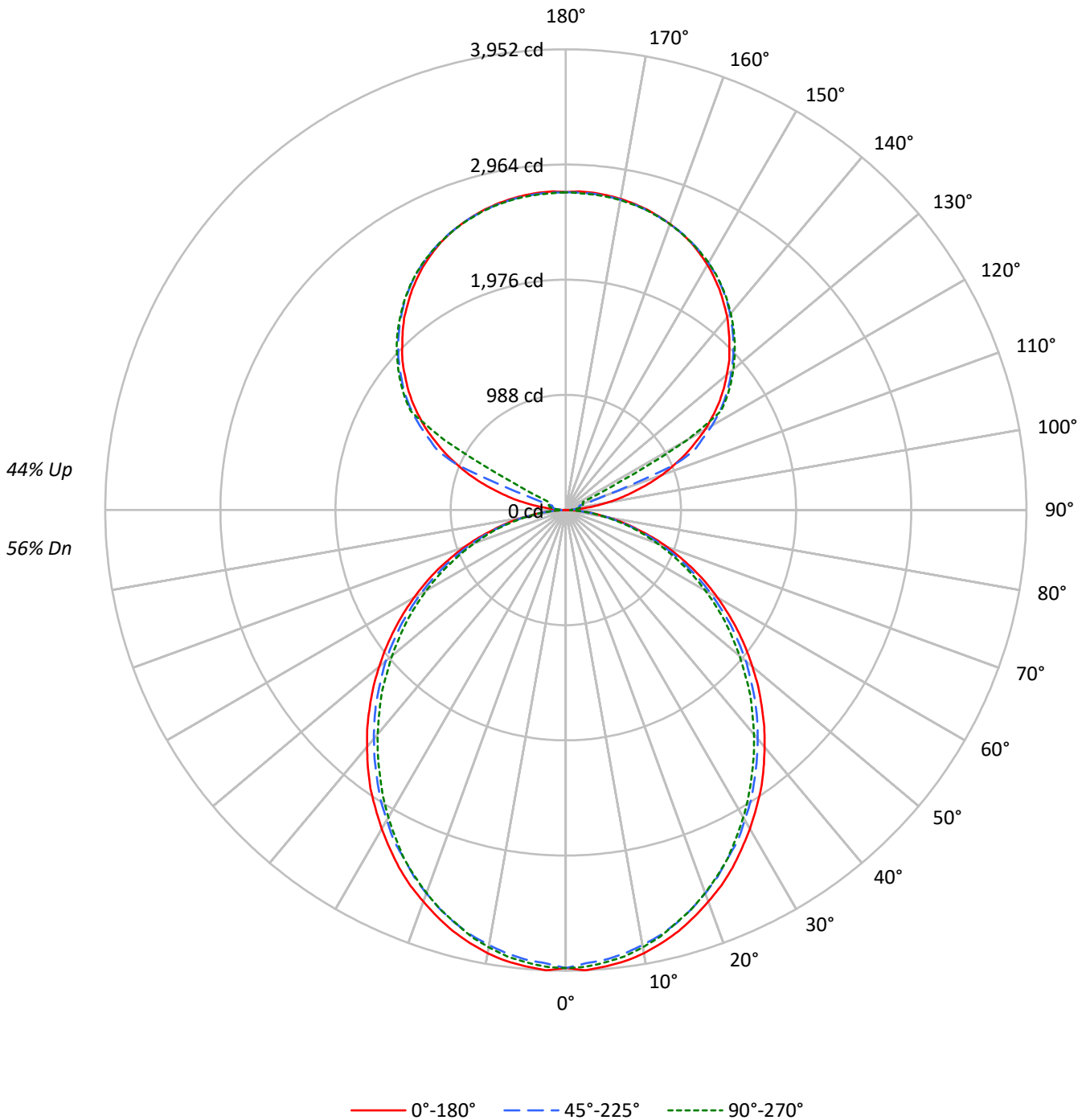
Test Method: LM-79-2019  
Report Number: P927752  
REPORT IS A COMBINATION OF REPORTS P900903 AND P896187  
Test Lab: INNOVATION CENTER  
Issue Date: 12/12/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-HX4F0-100D080US840-FLLONL  
Description: 4 foot, Hexagon Define Geo, with Direct Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 17994.7 lumens  
Efficiency: N/A  
Efficacy: 114.1 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): 157.7  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.946  
Total Harmonic Distortion (THDi): 0.132  
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	108	108	108	108	101	101	101	101	86	86	86	73	73	73	61	61	61	56			56
1	99	95	91	87	92	88	85	82	76	73	71	65	63	61	54	53	52	47			47
2	90	83	76	71	84	77	72	67	66	62	59	57	54	51	48	46	44	39			39
3	82	73	65	59	76	68	61	56	59	54	50	50	46	43	42	39	37	33			33
4	75	64	56	50	70	60	53	48	52	47	42	45	40	37	38	35	32	29			29
5	69	57	49	43	64	54	46	41	47	41	36	40	36	32	34	31	28	25			25
6	64	52	43	37	59	48	41	36	42	36	32	36	32	28	31	27	25	22			22
7	59	47	39	33	55	44	36	31	38	32	28	33	28	25	28	25	22	19			19
8	55	42	34	29	51	40	33	28	35	29	25	30	26	22	26	22	20	17			17
9	51	39	31	26	47	36	29	25	32	26	22	28	23	20	24	20	18	16			16
10	48	35	28	23	44	33	27	22	29	24	20	26	21	18	22	19	16	14			14

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

	0°	45°	90°
0°	2922	2922	2922
5°	2927	2881	2900
10°	2903	2843	2861
15°	2861	2796	2800
20°	2803	2731	2737
25°	2746	2654	2665
30°	2674	2582	2573
35°	2606	2497	2475
40°	2523	2411	2382
45°	2440	2325	2288
50°	2348	2235	2178
55°	2253	2130	2077
60°	2145	2006	1961
65°	2028	1878	1824
70°	1878	1721	1677
75°	1671	1534	1542
80°	1421	1295	1283
85°	1031	882	853

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 2440 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	369.8	2.1
10°-20°	1040.5	5.8
20°-30°	1529.1	8.5
30°-40°	1776.0	9.9
40°-50°	1773.8	9.9
50°-60°	1546.7	8.6
60°-70°	1143.4	6.4
70°-80°	646.9	3.6
80°-90°	175.5	1.0
90°-100°	89.9	0.5
100°-110°	335.1	1.9
110°-120°	888.8	4.9
120°-130°	1474.2	8.2
130°-140°	1565.9	8.7
140°-150°	1455.3	8.1
150°-160°	1170.1	6.5
160°-170°	754.0	4.2
170°-180°	259.5	1.4
0°-30°	2939.5	16.3
0°-40°	4715.5	26.2
0°-60°	8036.0	44.7
0°-90°	10001.9	55.6
90°-120°	1313.9	7.3
90°-150°	5809.3	32.3
90°-180°	7993.0	44.4
0°-180°	17994.7	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	3929	3929	3929	3929	3929	
5°	3929	3914	3873	3903	3896	373
15°	3740	3718	3669	3684	3665	1053
25°	3385	3355	3291	3298	3291	1558
35°	2921	2883	2822	2800	2781	1824
45°	2377	2350	2293	2252	2237	1834
55°	1799	1776	1730	1685	1666	1608
65°	1213	1190	1152	1118	1100	1199
75°	635	627	608	586	593	677
85°	155	151	148	136	132	173
90°	2	24	39	49	53	17
95°	128	63	77	87	85	152
105°	600	659	120	142	150	641
115°	1134	1168	1217	304	162	1117
125°	1604	1630	1667	1681	1687	1430
135°	1985	2016	2034	2054	2050	1533
145°	2302	2300	2334	2348	2338	1440
155°	2535	2517	2541	2553	2537	1168
165°	2671	2659	2665	2679	2665	755
175°	2732	2718	2722	2736	2717	260
180°	2726	2726	2726	2726	2726	



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**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°
0°	3929.2	3929.2	3929.2	3929.2	3929.2
2.5°	3952.1	3933.2	3891.5	3929.2	3922.0
5°	3929.2	3914.4	3872.7	3902.8	3895.5
7.5°	3902.8	3880.3	3838.6	3869.0	3861.5
10°	3861.5	3835.0	3789.7	3819.8	3808.6
12.5°	3804.5	3782.1	3736.8	3755.6	3748.0
15°	3740.4	3718.0	3668.6	3683.9	3665.1
17.5°	3661.0	3638.6	3589.2	3608.1	3589.2
20°	3574.0	3551.6	3498.7	3509.9	3495.0
22.5°	3487.4	3453.4	3404.0	3404.0	3396.5
25°	3385.3	3355.2	3291.0	3298.2	3291.0
27.5°	3271.8	3245.3	3196.4	3185.2	3166.3
30°	3158.8	3128.3	3071.7	3060.5	3045.3
32.5°	3037.7	3015.3	2954.7	2931.9	2916.6
35°	2920.6	2883.0	2822.4	2799.6	2780.7
37.5°	2788.4	2754.2	2693.7	2667.3	2648.4
40°	2652.4	2621.9	2561.5	2527.8	2512.6
42.5°	2520.2	2489.7	2429.6	2391.5	2369.1
45°	2376.7	2350.2	2293.3	2252.0	2236.8
47.5°	2236.8	2210.4	2149.8	2108.1	2085.6
50°	2089.3	2070.4	2017.5	1964.6	1945.8
52.5°	1945.8	1919.3	1870.4	1828.7	1802.3
55°	1798.7	1775.8	1730.5	1685.2	1666.4
57.5°	1651.1	1632.2	1583.0	1537.7	1522.5
60°	1503.6	1488.7	1435.8	1394.1	1382.9
62.5°	1360.1	1333.6	1296.0	1258.3	1243.1
65°	1213.0	1190.2	1152.5	1118.4	1099.6
67.5°	1061.9	1042.6	1009.0	982.5	967.3
70°	921.9	906.7	872.7	846.2	831.4
72.5°	778.5	763.2	744.4	718.0	706.7
75°	634.6	627.4	608.1	585.7	593.3
77.5°	506.3	491.1	483.4	472.2	461.0
80°	378.0	374.0	366.4	355.1	347.6
82.5°	257.0	257.0	253.4	238.1	238.1
85°	154.7	151.2	147.5	135.9	132.3
87.5°	68.2	60.5	52.9	41.7	37.7
90°	1.9	23.6	39.4	49.4	53.2
92.5°	49.4	41.5	47.4	51.3	53.2
95°	128.1	63.0	76.8	86.9	84.8
97.5°	230.7	69.1	100.5	106.6	108.5
100°	349.3	79.0	112.5	128.1	132.1
102.5°	479.4	475.5	116.4	137.9	144.1
105°	599.7	659.0	120.4	142.0	150.0
107.5°	739.8	789.0	124.4	145.9	153.9
110°	874.1	915.3	345.4	148.0	155.8



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**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°
112.5°	1000.3	1035.7	1002.2	151.8	157.9
115°	1134.3	1167.8	1217.2	303.8	161.9
117.5°	1250.7	1290.1	1323.8	1041.5	524.8
120°	1381.0	1410.5	1446.1	1469.8	1203.4
122.5°	1491.3	1523.0	1562.6	1574.3	1576.4
125°	1603.8	1629.5	1667.0	1680.8	1686.7
127.5°	1706.4	1734.0	1763.8	1783.4	1785.3
130°	1803.1	1834.7	1856.3	1878.1	1876.2
132.5°	1901.8	1927.5	1949.1	1966.9	1965.0
135°	1984.7	2016.3	2033.8	2053.8	2049.8
137.5°	2071.4	2095.0	2114.9	2134.6	2128.8
140°	2156.1	2172.1	2193.7	2211.5	2201.6
142.5°	2227.4	2241.2	2266.7	2282.5	2272.6
145°	2302.3	2300.2	2333.7	2347.6	2337.7
147.5°	2367.3	2361.4	2394.8	2404.7	2397.0
150°	2430.5	2416.7	2448.3	2460.0	2450.2
152.5°	2483.7	2468.0	2497.4	2509.5	2495.6
155°	2535.0	2517.4	2541.1	2552.8	2537.1
157.5°	2576.4	2560.8	2578.5	2592.4	2576.4
160°	2612.0	2600.1	2612.0	2623.8	2609.9
162.5°	2643.5	2631.7	2641.5	2655.4	2637.6
165°	2671.1	2659.4	2665.3	2679.0	2665.3
167.5°	2692.8	2680.9	2687.0	2700.8	2683.0
170°	2710.7	2698.7	2702.7	2716.6	2698.7
172.5°	2722.4	2710.7	2714.6	2728.5	2710.7
175°	2732.2	2718.4	2722.4	2736.2	2716.6
177.5°	2736.2	2722.4	2724.4	2738.3	2720.5
180°	2726.4	2726.4	2726.4	2726.4	2726.4



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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	11.50	12.41	12.41	13.34	14.53	11.07	11.98	11.97	12.91	14.10
	3H	13.16	13.98	14.08	14.92	16.13	12.69	13.51	13.61	14.45	15.66
	4H	13.75	14.53	14.69	15.47	16.69	13.28	14.06	14.21	15.00	16.22
	6H	14.16	14.87	15.10	15.82	17.06	13.68	14.40	14.63	15.34	16.58
	8H	14.26	14.94	15.22	15.91	17.14	13.79	14.47	14.74	15.43	16.67
	12H	14.31	14.96	15.27	15.92	17.18	13.83	14.48	14.79	15.44	16.70
4H	2H	11.97	12.74	12.91	13.68	14.91	11.62	12.40	12.56	13.34	14.56
	3H	13.84	14.49	14.79	15.46	16.69	13.45	14.09	14.40	15.06	16.30
	4H	14.56	15.15	15.52	16.11	17.37	14.15	14.74	15.11	15.71	16.97
	6H	15.08	15.59	16.05	16.57	17.84	14.67	15.18	15.64	16.16	17.43
	8H	15.23	15.70	16.20	16.69	17.96	14.81	15.29	15.79	16.27	17.55
	12H	15.30	15.73	16.30	16.73	18.01	14.88	15.31	15.87	16.31	17.59
8H	4H	14.76	15.23	15.73	16.22	17.49	14.40	14.87	15.37	15.86	17.13
	6H	15.39	15.79	16.39	16.81	18.08	15.03	15.42	16.03	16.45	17.72
	8H	15.61	15.96	16.62	16.98	18.27	15.25	15.59	16.25	16.61	17.90
	12H	15.75	16.06	16.76	17.06	18.40	15.36	15.67	16.38	16.68	18.01
12H	4H	14.75	15.18	15.74	16.18	17.46	14.39	14.82	15.39	15.82	17.10
	6H	15.42	15.77	16.43	16.78	18.08	15.07	15.42	16.08	16.43	17.72
	8H	15.67	15.98	16.68	16.98	18.32	15.31	15.62	16.32	16.62	17.96