

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: P927620

Luminaire Tested: DFN2DIP-HX4F0-060D110US840-FLLONL

Issue Date: 12/12/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P927620  
REPORT IS A COMBINATION OF REPORTS P900949 AND P896187  
Test Lab: INNOVATION CENTER  
Issue Date: 12/12/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-HX4F0-060D110US840-FLONL  
Description: 4 foot, Hexagon Define Geo, with Direct Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

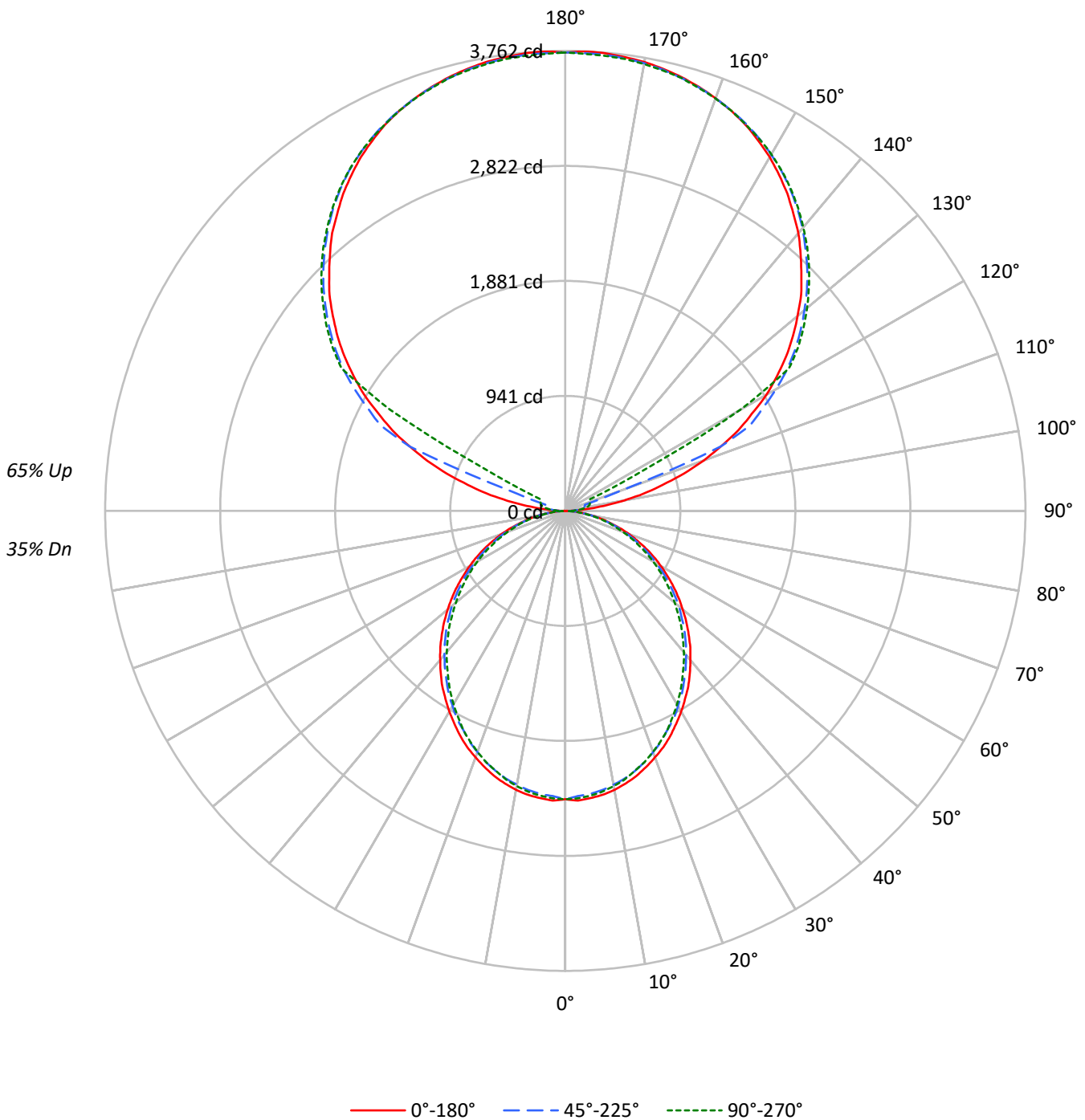
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 16994.9 lumens  
Efficiency: N/A  
Efficacy: 120.2 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: Semi-Indirect

Input Watts (W): 141.4  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.099  
Total Harmonic Distortion (THDi): 0.979  
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	104	104	104	104	94	94	94	94	75	75	75	58	58	58	43	43	43	35				35
1	95	90	86	83	85	82	79	76	66	64	62	51	50	48	38	37	36	30				30
2	86	79	73	68	78	71	66	62	58	54	51	45	43	40	33	32	30	25				25
3	78	69	62	56	71	63	57	52	51	46	43	40	37	34	29	27	26	21				21
4	72	61	53	48	65	56	49	44	45	40	36	35	32	29	26	24	22	18				18
5	66	54	46	41	59	50	43	38	40	35	31	32	28	25	24	21	19	16				16
6	60	49	41	35	54	44	37	32	36	31	27	29	25	22	21	19	17	14				14
7	56	44	36	31	50	40	33	28	33	28	24	26	22	19	20	17	15	12				12
8	52	40	32	27	47	36	30	25	30	25	21	24	20	17	18	15	13	11				11
9	48	36	29	24	43	33	27	22	27	22	19	22	18	15	17	14	12	10				10
10	45	33	26	21	41	30	24	20	25	20	17	20	16	14	15	13	11	9				9

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

	0°	45°	90°
0°	1753	1753	1753
5°	1756	1729	1740
10°	1742	1706	1717
15°	1716	1678	1680
20°	1682	1639	1643
25°	1648	1592	1599
30°	1605	1549	1544
35°	1564	1498	1485
40°	1514	1447	1429
45°	1464	1395	1372
50°	1409	1341	1306
55°	1352	1278	1246
60°	1287	1204	1176
65°	1217	1127	1094
70°	1127	1033	1006
75°	1002	920	925
80°	853	777	770
85°	619	529	512

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 90°  
 Vertical Angle: 90°  
 Luminance: 1925 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	221.9	1.3
10°-20°	624.3	3.7
20°-30°	917.5	5.4
30°-40°	1065.6	6.3
40°-50°	1064.3	6.3
50°-60°	928.0	5.5
60°-70°	686.0	4.0
70°-80°	388.1	2.3
80°-90°	109.0	0.6
90°-100°	123.6	0.7
100°-110°	460.8	2.7
110°-120°	1222.1	7.2
120°-130°	2027.0	11.9
130°-140°	2153.1	12.7
140°-150°	2001.1	11.8
150°-160°	1608.8	9.5
160°-170°	1036.7	6.1
170°-180°	356.8	2.1
0°-30°	1763.7	10.4
0°-40°	2829.3	16.6
0°-60°	4821.6	28.4
0°-90°	6004.8	35.3
90°-120°	1806.5	10.6
90°-150°	7987.8	47.0
90°-180°	10990.0	64.7
0°-180°	16994.9	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	2358	2358	2358	2358	2358	
5°	2358	2349	2324	2342	2337	224
15°	2244	2231	2201	2210	2199	632
25°	2031	2013	1975	1979	1975	935
35°	1752	1730	1693	1680	1668	1094
45°	1426	1410	1376	1351	1342	1101
55°	1079	1065	1038	1011	1000	965
65°	728	714	692	671	660	720
75°	381	376	365	351	356	406
85°	93	91	88	82	79	104
90°	3	32	54	68	73	16
95°	176	87	106	120	117	209
105°	825	906	166	195	206	881
115°	1560	1606	1674	418	223	1535
125°	2205	2241	2292	2311	2319	1967
135°	2729	2772	2796	2824	2818	2108
145°	3166	3163	3209	3228	3214	1980
155°	3486	3461	3494	3510	3488	1606
165°	3673	3657	3665	3684	3665	1038
175°	3757	3738	3743	3762	3735	358
180°	3749	3749	3749	3749	3749	



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**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°
0°	2357.5	2357.5	2357.5	2357.5	2357.5
2.5°	2371.2	2359.9	2334.9	2357.5	2353.1
5°	2357.5	2348.6	2323.5	2341.6	2337.3
7.5°	2341.6	2328.2	2303.2	2321.4	2316.9
10°	2316.9	2301.0	2273.8	2291.8	2285.1
12.5°	2282.8	2269.2	2242.1	2253.4	2248.8
15°	2244.2	2230.7	2201.2	2210.4	2199.0
17.5°	2196.6	2183.2	2153.6	2164.8	2153.6
20°	2144.4	2131.0	2099.2	2105.9	2097.1
22.5°	2092.5	2072.0	2042.4	2042.4	2037.9
25°	2031.1	2013.1	1974.6	1978.9	1974.6
27.5°	1963.1	1947.2	1917.8	1911.1	1899.8
30°	1895.3	1876.9	1843.1	1836.3	1827.1
32.5°	1822.6	1809.2	1772.8	1759.1	1750.0
35°	1752.4	1729.8	1693.4	1679.7	1668.4
37.5°	1673.0	1652.5	1616.3	1600.3	1589.0
40°	1591.4	1573.2	1536.9	1516.7	1507.5
42.5°	1512.1	1493.8	1457.7	1434.9	1421.4
45°	1426.0	1410.1	1376.0	1351.2	1342.0
47.5°	1342.0	1326.2	1289.9	1264.9	1251.3
50°	1253.6	1242.3	1210.5	1178.7	1167.4
52.5°	1167.4	1151.6	1122.2	1097.2	1081.4
55°	1079.2	1065.4	1038.3	1011.1	999.8
57.5°	990.7	979.4	949.8	922.7	913.5
60°	902.2	893.3	861.6	836.5	829.8
62.5°	816.0	800.2	777.5	754.9	745.8
65°	727.8	714.1	691.5	671.0	659.7
67.5°	637.1	625.6	605.4	589.5	580.3
70°	553.2	544.1	523.6	507.7	498.8
72.5°	467.0	457.9	446.6	430.8	424.0
75°	380.7	376.5	364.8	351.4	356.0
77.5°	303.7	294.7	290.0	283.3	276.6
80°	226.8	224.4	219.8	213.1	208.5
82.5°	154.2	154.2	152.0	142.9	142.9
85°	92.8	90.7	88.5	81.5	79.4
87.5°	40.9	36.4	31.7	25.0	22.6
90°	2.6	32.5	54.1	68.0	73.1
92.5°	68.0	57.1	65.0	70.6	73.1
95°	176.2	86.6	105.6	119.5	116.6
97.5°	317.3	95.0	138.1	146.5	149.1
100°	480.3	108.6	154.6	176.2	181.7
102.5°	659.0	653.8	160.1	189.7	198.1
105°	824.6	906.1	165.6	195.2	206.2
107.5°	1017.3	1084.8	171.1	200.6	211.7
110°	1201.8	1258.5	474.8	203.6	214.2



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**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°
112.5°	1375.4	1424.0	1378.0	208.7	217.1
115°	1559.6	1605.7	1673.7	417.8	222.6
117.5°	1719.8	1773.9	1820.3	1432.1	721.5
120°	1898.8	1939.4	1988.4	2020.9	1654.7
122.5°	2050.6	2094.0	2148.5	2164.6	2167.5
125°	2205.2	2240.6	2292.1	2311.1	2319.2
127.5°	2346.3	2384.2	2425.1	2452.2	2454.8
130°	2479.3	2522.8	2552.4	2582.4	2579.8
132.5°	2614.9	2650.3	2680.0	2704.4	2701.9
135°	2729.0	2772.4	2796.5	2824.0	2818.5
137.5°	2848.1	2880.7	2908.0	2935.1	2927.0
140°	2964.8	2986.6	3016.3	3040.7	3027.2
142.5°	3062.6	3081.6	3116.7	3138.4	3124.8
145°	3165.7	3162.8	3208.8	3227.9	3214.4
147.5°	3255.0	3246.9	3293.0	3306.5	3295.9
150°	3341.9	3322.9	3366.4	3382.5	3369.0
152.5°	3415.0	3393.4	3434.0	3450.5	3431.5
155°	3485.6	3461.4	3493.9	3510.1	3488.5
157.5°	3542.6	3521.0	3545.5	3564.5	3542.6
160°	3591.6	3575.1	3591.6	3607.6	3588.6
162.5°	3634.7	3618.6	3632.1	3651.1	3626.7
165°	3672.7	3656.6	3664.7	3683.6	3664.7
167.5°	3702.6	3686.3	3694.7	3713.6	3689.2
170°	3727.2	3710.7	3716.2	3735.3	3710.7
172.5°	3743.2	3727.2	3732.6	3751.6	3727.2
175°	3756.8	3737.8	3743.2	3762.3	3735.3
177.5°	3762.3	3743.2	3746.2	3765.1	3740.7
180°	3748.8	3748.8	3748.8	3748.8	3748.8



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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	7.69	8.43	8.76	9.51	10.97	7.26	8.00	8.33	9.08	10.54
	3H	9.34	10.01	10.43	11.09	12.58	8.87	9.54	9.95	10.62	12.10
	4H	9.92	10.56	11.02	11.64	13.13	9.45	10.08	10.55	11.17	12.66
	6H	10.32	10.90	11.42	11.99	13.49	9.84	10.43	10.95	11.51	13.02
	8H	10.42	10.97	11.53	12.08	13.57	9.95	10.50	11.05	11.60	13.10
	12H	10.47	10.99	11.58	12.09	13.61	9.98	10.51	11.10	11.61	13.13
4H	2H	8.14	8.77	9.24	9.85	11.35	7.79	8.43	8.89	9.51	11.00
	3H	9.99	10.52	11.10	11.63	13.14	9.60	10.13	10.71	11.24	12.74
	4H	10.70	11.19	11.82	12.29	13.81	10.30	10.78	11.41	11.88	13.41
	6H	11.21	11.63	12.33	12.75	14.27	10.80	11.22	11.92	12.34	13.86
	8H	11.36	11.75	12.48	12.87	14.40	10.95	11.34	12.07	12.45	13.99
	12H	11.43	11.78	12.57	12.91	14.45	11.01	11.36	12.14	12.49	14.02
8H	4H	10.89	11.28	12.01	12.40	13.93	10.53	10.92	11.65	12.04	13.57
	6H	11.52	11.84	12.66	13.00	14.53	11.16	11.48	12.30	12.64	14.16
	8H	11.74	12.02	12.89	13.16	14.71	11.37	11.65	12.52	12.79	14.34
	12H	11.87	12.11	13.02	13.25	14.83	11.48	11.73	12.63	12.86	14.45
12H	4H	10.87	11.22	12.01	12.35	13.89	10.52	10.87	11.66	12.00	13.54
	6H	11.55	11.83	12.70	12.97	14.52	11.20	11.48	12.34	12.62	14.17
	8H	11.79	12.03	12.94	13.17	14.75	11.43	11.67	12.58	12.81	14.40