

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: P929078

Luminaire Tested: DFN2DIP-HX4F0-110D060US935-RLONL

Issue Date: 12/12/2024

**Test Information**

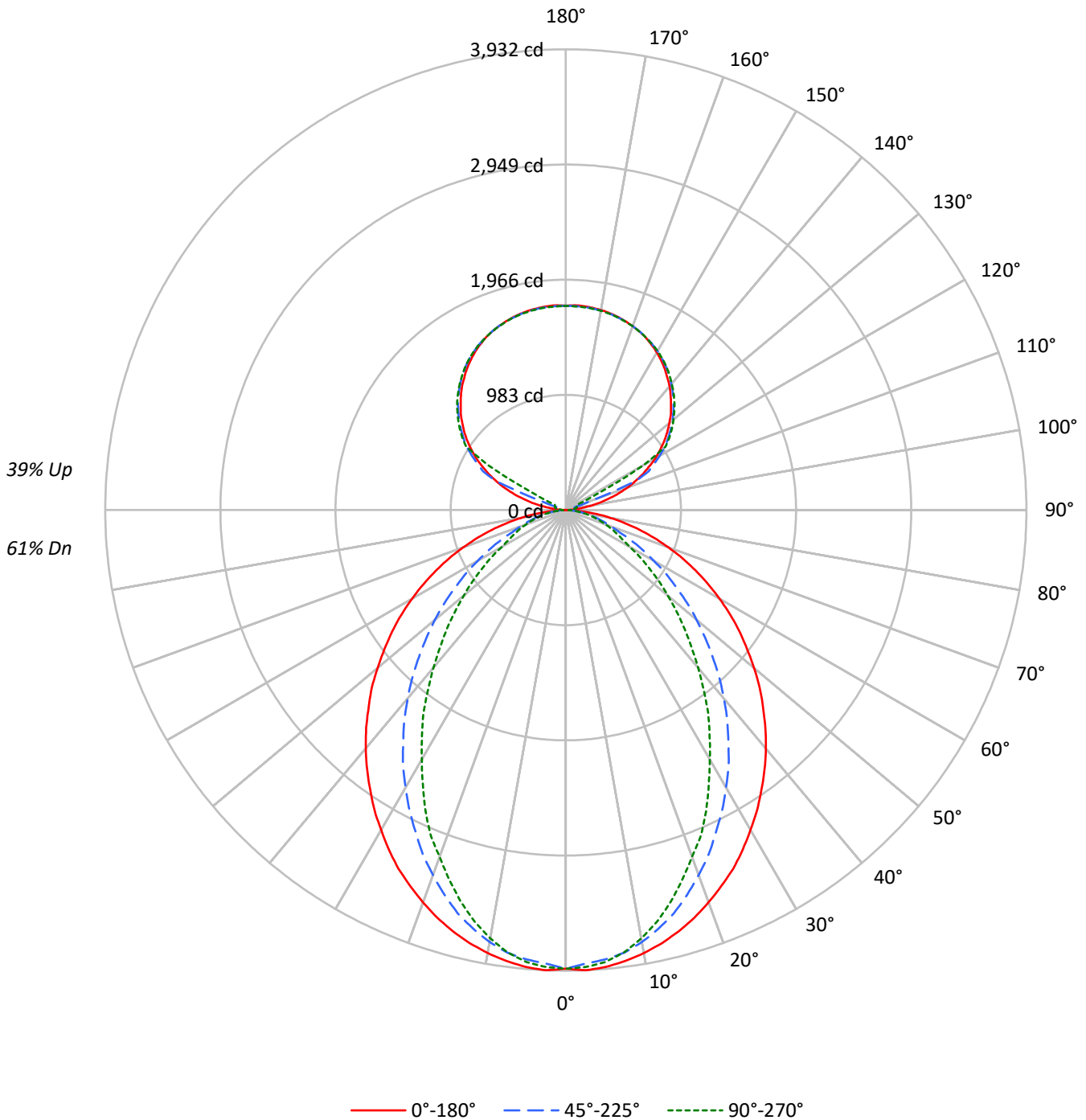
Test Method: LM-79-2019  
Report Number: P929078  
REPORT IS A COMBINATION OF REPORTS P900870 AND P896187  
Test Lab: INNOVATION CENTER  
Issue Date: 12/12/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-HX4F0-110D060US935-RLONL  
Description: 4 foot, 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: 13164.7 lumens  
Efficiency: N/A  
Efficacy: 84.2 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: Semi-Direct  
  
Input Watts (W): 156.3  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9967  
Total Harmonic Distortion (THDi): 0.063  
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	110	110	110	110	103	103	103	103	90	90	90	77	77	77	66	66	66	66	66	66	61
1	101	97	93	90	94	91	87	85	79	77	75	69	67	66	60	58	57	60	58	57	53
2	92	85	79	74	86	80	75	70	70	66	63	61	58	56	53	51	49	53	51	49	45
3	85	75	68	63	79	71	65	60	63	58	54	55	51	48	48	45	43	48	45	43	39
4	78	67	59	54	73	63	56	51	56	51	46	49	45	42	43	40	37	43	40	37	34
5	72	60	52	46	67	57	50	44	51	45	40	45	40	37	39	36	33	39	36	33	30
6	66	54	46	41	62	51	44	39	46	40	36	41	36	32	36	32	29	36	32	29	27
7	61	49	41	36	58	47	40	35	42	36	32	37	32	29	33	29	26	33	29	26	24
8	57	45	37	32	54	43	36	31	38	33	28	34	29	26	30	26	24	30	26	24	21
9	53	41	34	29	50	39	32	28	35	30	26	32	27	24	28	24	22	28	24	22	19
10	50	38	31	26	47	36	30	25	33	27	23	29	25	21	26	22	20	26	22	20	18

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

	0°	45°	90°
0°	2911	2911	2911
5°	2915	2865	2883
10°	2887	2809	2789
15°	2847	2716	2644
20°	2795	2588	2466
25°	2741	2445	2295
30°	2669	2298	2077
35°	2599	2141	1885
40°	2527	1977	1666
45°	2444	1796	1467
50°	2357	1613	1273
55°	2267	1417	1086
60°	2163	1212	894
65°	2043	1004	805
70°	1898	810	729
75°	1716	715	663
80°	1452	601	576
85°	1015	402	433

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 2444 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	366.9	2.8
10°-20°	1007.1	7.7
20°-30°	1413.9	10.7
30°-40°	1541.3	11.7
40°-50°	1416.6	10.8
50°-60°	1112.5	8.5
60°-70°	724.2	5.5
70°-80°	372.8	2.8
80°-90°	98.2	0.7
90°-100°	57.5	0.4
100°-110°	214.3	1.6
110°-120°	568.4	4.3
120°-130°	942.7	7.2
130°-140°	1001.4	7.6
140°-150°	930.7	7.1
150°-160°	748.2	5.7
160°-170°	482.1	3.7
170°-180°	165.9	1.3
0°-30°	2787.9	21.2
0°-40°	4329.2	32.9
0°-60°	6858.3	52.1
0°-90°	8053.4	61.2
90°-120°	840.2	6.4
90°-150°	3714.9	28.2
90°-180°	5111.0	38.8
0°-180°	13164.7	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	3914	3914	3914	3914	3914	
5°	3914	3897	3850	3882	3872	371
15°	3723	3684	3564	3496	3461	1049
25°	3380	3266	3032	2887	2834	1554
35°	2912	2731	2420	2196	2118	1823
45°	2381	2143	1771	1520	1435	1838
55°	1810	1534	1151	939	872	1617
65°	1222	935	616	496	485	1212
75°	652	404	283	259	255	689
85°	152	78	67	67	67	175
90°	1	15	25	32	34	12
95°	82	40	49	56	54	97
105°	384	421	77	91	96	410
115°	725	747	778	194	104	714
125°	1026	1042	1066	1075	1079	915
135°	1269	1289	1301	1313	1311	980
145°	1472	1471	1492	1501	1495	921
155°	1621	1610	1625	1632	1622	747
165°	1708	1701	1704	1713	1704	483
175°	1747	1738	1741	1750	1737	166
180°	1743	1743	1743	1743	1743	



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**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°
0°	3914.4	3914.4	3914.4	3914.4	3914.4
2.5°	3932.0	3914.4	3875.3	3911.0	3903.9
5°	3914.4	3896.7	3850.5	3882.4	3871.9
7.5°	3882.4	3861.3	3811.7	3825.7	3807.9
10°	3840.0	3815.1	3744.5	3733.6	3712.5
12.5°	3786.9	3755.0	3659.2	3638.1	3599.0
15°	3723.1	3684.0	3563.7	3496.4	3461.0
17.5°	3648.7	3591.9	3443.1	3365.2	3308.5
20°	3563.7	3492.6	3315.6	3227.3	3149.1
22.5°	3471.6	3390.0	3184.5	3064.2	3011.2
25°	3379.5	3266.0	3032.3	2887.2	2833.8
27.5°	3269.8	3149.1	2890.5	2724.0	2642.5
30°	3152.9	3018.0	2734.6	2554.2	2458.3
32.5°	3039.4	2876.3	2586.1	2373.4	2284.7
35°	2912.0	2731.2	2419.7	2196.4	2118.2
37.5°	2788.0	2592.9	2263.7	2019.0	1930.7
40°	2656.8	2444.5	2100.6	1849.1	1757.0
42.5°	2522.2	2295.6	1937.9	1675.5	1587.2
45°	2380.6	2143.0	1771.3	1519.5	1434.6
47.5°	2246.0	1994.6	1612.0	1360.1	1282.4
50°	2097.1	1845.7	1456.0	1211.3	1137.3
52.5°	1951.7	1686.0	1307.2	1073.4	1006.1
55°	1810.0	1533.8	1151.2	938.8	871.6
57.5°	1665.0	1381.6	1013.2	814.9	758.0
60°	1516.1	1232.8	867.8	687.4	630.7
62.5°	1371.1	1087.7	743.8	573.9	545.7
65°	1222.2	935.0	616.4	496.1	485.2
67.5°	1080.6	793.4	496.1	435.6	425.1
70°	931.7	655.5	410.8	375.5	361.2
72.5°	790.0	527.7	343.5	315.3	308.2
75°	651.7	403.6	283.4	258.6	255.2
77.5°	513.8	286.8	223.3	209.0	201.8
80°	386.0	205.6	169.9	156.0	156.0
82.5°	269.1	138.3	116.9	109.8	109.8
85°	152.2	77.8	67.2	67.2	67.2
87.5°	56.7	28.2	28.2	24.8	24.8
90°	1.2	15.2	25.1	31.6	34.0
92.5°	31.6	26.5	30.2	32.8	34.0
95°	82.0	40.3	49.2	55.6	54.2
97.5°	147.6	44.2	64.2	68.2	69.4
100°	223.3	50.5	71.9	82.0	84.5
102.5°	306.5	304.1	74.5	88.3	92.1
105°	383.5	421.4	77.0	90.7	95.9
107.5°	473.1	504.5	79.6	93.3	98.4
110°	559.0	585.3	220.8	94.7	99.6



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**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°
112.5°	639.6	662.3	640.8	97.0	101.0
115°	725.4	746.8	778.4	194.3	103.5
117.5°	799.8	825.0	846.5	666.1	335.5
120°	883.1	902.0	924.8	939.9	769.6
122.5°	953.6	973.9	999.2	1006.7	1008.1
125°	1025.6	1042.1	1066.0	1074.9	1078.6
127.5°	1091.2	1108.9	1127.9	1140.5	1141.7
130°	1153.1	1173.3	1187.1	1201.0	1199.8
132.5°	1216.2	1232.6	1246.4	1257.7	1256.5
135°	1269.2	1289.4	1300.6	1313.4	1310.8
137.5°	1324.6	1339.7	1352.5	1365.0	1361.3
140°	1378.8	1389.1	1402.8	1414.2	1407.9
142.5°	1424.4	1433.2	1449.6	1459.6	1453.3
145°	1472.3	1470.9	1492.4	1501.2	1495.0
147.5°	1513.8	1510.0	1531.5	1537.7	1532.8
150°	1554.3	1545.4	1565.6	1573.1	1566.8
152.5°	1588.3	1578.2	1597.1	1604.7	1595.9
155°	1621.1	1609.8	1625.0	1632.5	1622.4
157.5°	1647.6	1637.5	1648.9	1657.8	1647.6
160°	1670.3	1662.7	1670.3	1677.8	1669.0
162.5°	1690.4	1682.9	1689.2	1698.1	1686.7
165°	1708.1	1700.6	1704.3	1713.2	1704.3
167.5°	1722.0	1714.4	1718.3	1727.2	1715.7
170°	1733.5	1725.8	1728.4	1737.2	1725.8
172.5°	1740.9	1733.5	1735.9	1744.8	1733.5
175°	1747.2	1738.4	1740.9	1749.7	1737.2
177.5°	1749.7	1740.9	1742.2	1751.1	1739.7
180°	1743.4	1743.4	1743.4	1743.4	1743.4



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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	11.84	12.77	12.71	13.65	14.76	7.82	8.75	8.68	9.63	10.73
	3H	13.53	14.36	14.40	15.25	16.38	9.02	9.85	9.89	10.74	11.87
	4H	14.14	14.93	15.03	15.82	16.97	9.47	10.26	10.36	11.15	12.29
	6H	14.57	15.29	15.47	16.20	17.35	9.80	10.52	10.70	11.42	12.58
	8H	14.70	15.39	15.61	16.31	17.46	9.89	10.58	10.80	11.50	12.65
	12H	14.77	15.42	15.68	16.33	17.51	9.94	10.60	10.86	11.51	12.69
4H	2H	11.87	12.66	12.77	13.55	14.70	8.43	9.21	9.32	10.10	11.25
	3H	13.71	14.37	14.62	15.29	16.45	9.79	10.44	10.69	11.36	12.52
	4H	14.41	15.00	15.33	15.93	17.11	10.34	10.93	11.26	11.86	13.04
	6H	14.93	15.44	15.86	16.39	17.57	10.77	11.28	11.70	12.22	13.41
	8H	15.11	15.59	16.04	16.53	17.72	10.90	11.38	11.83	12.32	13.51
	12H	15.21	15.64	16.16	16.60	17.80	10.97	11.40	11.92	12.36	13.56
8H	4H	14.39	14.86	15.32	15.80	17.00	10.63	11.11	11.56	12.04	13.24
	6H	14.96	15.35	15.92	16.33	17.53	11.15	11.55	12.11	12.53	13.72
	8H	15.18	15.52	16.14	16.50	17.71	11.35	11.69	12.31	12.67	13.88
	12H	15.32	15.63	16.29	16.59	17.85	11.47	11.78	12.44	12.74	14.00
12H	4H	14.34	14.77	15.30	15.73	16.93	10.64	11.07	11.59	12.02	13.23
	6H	14.93	15.28	15.90	16.25	17.47	11.20	11.55	12.17	12.52	13.74
	8H	15.16	15.47	16.13	16.43	17.69	11.42	11.73	12.39	12.69	13.95