

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: P926980

Luminaire Tested: DFN2DIP-HX4F0-070D040US830-FLLONL

Issue Date: 12/12/2024

**Test Information**

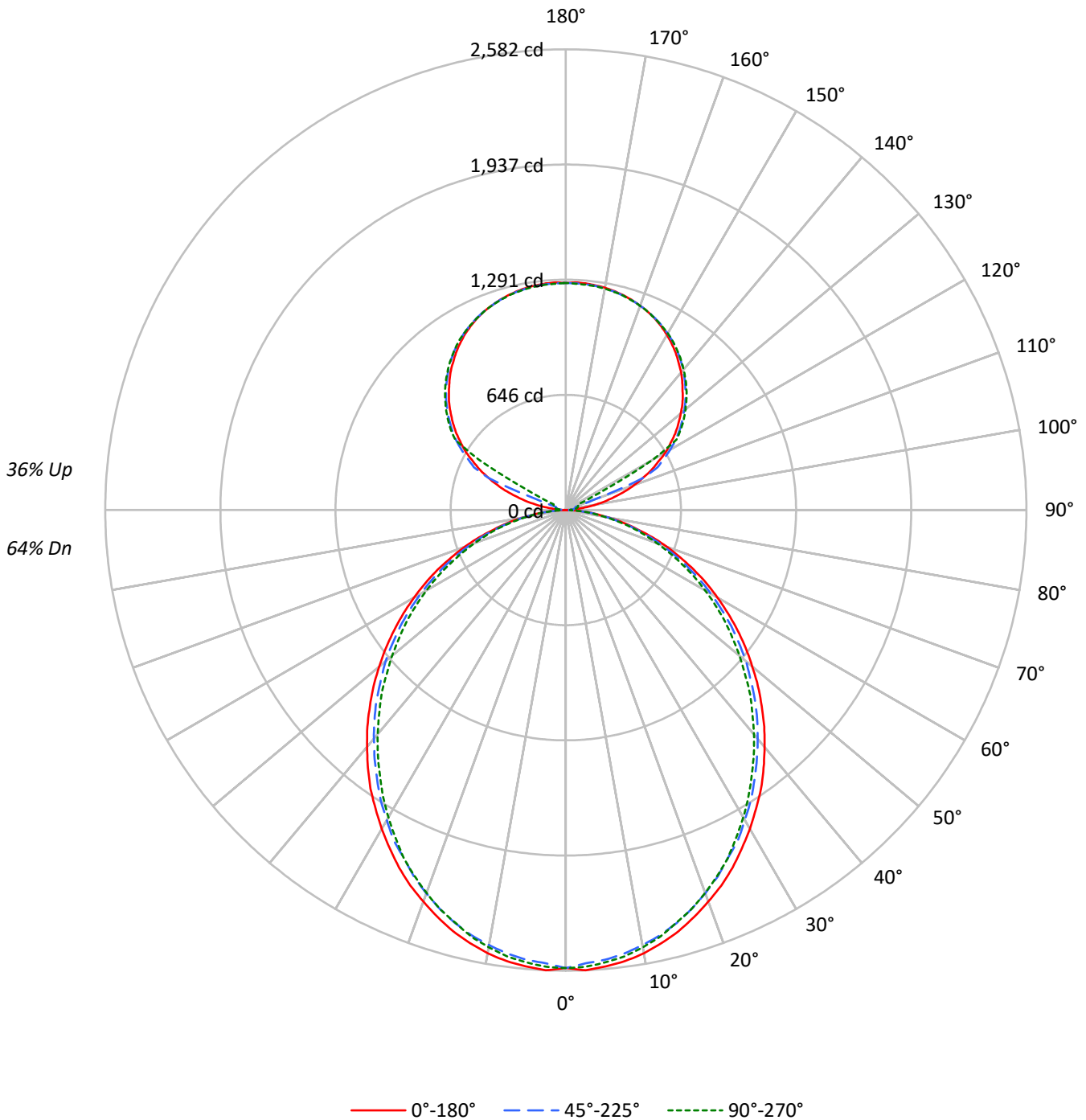
Test Method: LM-79-2019  
Report Number: P926980  
REPORT IS A COMBINATION OF REPORTS P900825 AND P896187  
Test Lab: INNOVATION CENTER  
Issue Date: 12/12/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-HX4F0-070D040US830-FLONL  
Description: 4 foot, Hexagon Define Geo, with Direct Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 10263.8 lumens  
Efficiency: N/A  
Efficacy: 106.5 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-Direct  
  
Input Watts (W): 96.4  
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

TEST NUMBER: P926980  
CATALOG NUMBER: DFN2DIP-HX4F0-070D040US830-FLLONL

### Luminous Intensity Polar Plot





TEST NUMBER: P926980

CATALOG NUMBER: DFN2DIP-HX4F0-070D040US830-FLLONL

**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	104	104	104	104	91	91	91	79	79	79	69	69	69	69	69	69	64
1	101	96	92	89	94	91	87	84	80	77	75	70	68	66	61	59	58	61	59	58	54
2	92	84	78	73	86	79	74	69	70	66	62	61	58	55	53	51	49	53	51	49	45
3	84	74	67	61	78	70	63	58	62	57	52	54	50	47	47	44	42	47	44	42	38
4	77	66	58	51	72	62	55	49	55	49	45	48	44	40	42	39	36	42	39	36	33
5	71	59	50	44	66	55	48	42	49	43	39	44	39	35	38	34	31	38	34	31	28
6	65	53	44	38	61	50	42	37	44	38	34	39	34	31	35	31	28	35	31	28	25
7	60	48	39	34	56	45	38	32	40	34	30	36	31	27	32	28	25	32	28	25	22
8	56	43	35	30	52	41	34	29	37	31	27	33	28	24	29	25	22	29	25	22	20
9	52	40	32	27	49	38	31	26	34	28	24	30	25	22	27	23	20	27	23	20	18
10	49	36	29	24	46	35	28	23	31	26	22	28	23	20	25	21	18	25	21	18	16

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

	0°	45°	90°
0°	1909	1909	1909
5°	1912	1882	1895
10°	1897	1857	1869
15°	1869	1827	1829
20°	1831	1785	1789
25°	1794	1734	1741
30°	1747	1687	1681
35°	1703	1631	1617
40°	1648	1575	1557
45°	1594	1519	1494
50°	1534	1460	1423
55°	1472	1392	1357
60°	1402	1311	1281
65°	1325	1227	1192
70°	1227	1124	1096
75°	1091	1002	1008
80°	928	846	838
85°	674	577	557

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 1594 cd/sqm



TEST NUMBER: P926980

CATALOG NUMBER: DFN2DIP-HX4F0-070D040US830-FLONL

**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	241.6	2.4
10°-20°	679.8	6.6
20°-30°	999.1	9.7
30°-40°	1160.4	11.3
40°-50°	1158.9	11.3
50°-60°	1010.5	9.8
60°-70°	747.0	7.3
70°-80°	422.7	4.1
80°-90°	113.8	1.1
90°-100°	41.9	0.4
100°-110°	156.4	1.5
110°-120°	414.8	4.0
120°-130°	688.0	6.7
130°-140°	730.8	7.1
140°-150°	679.2	6.6
150°-160°	546.0	5.3
160°-170°	351.9	3.4
170°-180°	121.1	1.2
0°-30°	1920.5	18.7
0°-40°	3080.9	30.0
0°-60°	5250.3	51.2
0°-90°	6533.8	63.7
90°-120°	613.1	6.0
90°-150°	2711.1	26.4
90°-180°	3730.0	36.3
0°-180°	10263.8	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	2567	2567	2567	2567	2567	
5°	2567	2558	2530	2550	2545	244
15°	2444	2429	2397	2407	2394	688
25°	2212	2192	2150	2155	2150	1018
35°	1908	1884	1844	1829	1817	1192
45°	1553	1536	1498	1471	1461	1198
55°	1175	1160	1131	1101	1089	1051
65°	792	778	753	731	718	784
75°	415	410	397	383	388	443
85°	101	99	96	89	86	113
90°	1	11	18	23	25	9
95°	60	29	36	40	40	71
105°	280	308	56	66	70	299
115°	529	545	568	142	76	521
125°	748	760	778	784	787	667
135°	926	941	949	958	957	715
145°	1074	1074	1089	1096	1091	672
155°	1183	1175	1186	1191	1184	545
165°	1247	1241	1244	1250	1244	352
175°	1275	1269	1270	1277	1268	121
180°	1272	1272	1272	1272	1272	



TEST NUMBER: P926980

CATALOG NUMBER: DFN2DIP-HX4F0-070D040US830-FLLONL

**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°
0°	2567.1	2567.1	2567.1	2567.1	2567.1
2.5°	2582.1	2569.7	2542.5	2567.1	2562.4
5°	2567.1	2557.5	2530.2	2549.8	2545.1
7.5°	2549.8	2535.1	2507.9	2527.9	2522.9
10°	2522.9	2505.5	2475.9	2495.6	2488.3
12.5°	2485.7	2471.0	2441.5	2453.7	2448.7
15°	2443.8	2429.1	2396.9	2406.9	2394.5
17.5°	2391.9	2377.3	2345.0	2357.4	2345.0
20°	2335.0	2320.4	2285.8	2293.2	2283.5
22.5°	2278.5	2256.3	2224.0	2224.0	2219.0
25°	2211.8	2192.1	2150.2	2154.9	2150.2
27.5°	2137.6	2120.3	2088.4	2081.0	2068.7
30°	2063.8	2043.8	2007.0	1999.6	1989.6
32.5°	1984.6	1970.0	1930.4	1915.5	1905.5
35°	1908.2	1883.6	1844.0	1829.1	1816.8
37.5°	1821.8	1799.5	1759.9	1742.7	1730.3
40°	1733.0	1713.1	1673.5	1651.5	1641.6
42.5°	1646.5	1626.7	1587.4	1562.5	1547.8
45°	1552.8	1535.5	1498.3	1471.3	1461.3
47.5°	1461.3	1444.1	1404.5	1377.3	1362.7
50°	1365.0	1352.7	1318.1	1283.6	1271.2
52.5°	1271.2	1254.0	1222.0	1194.8	1177.5
55°	1175.1	1160.2	1130.6	1101.0	1088.7
57.5°	1078.8	1066.4	1034.2	1004.6	994.7
60°	982.4	972.7	938.2	910.9	903.6
62.5°	888.6	871.3	846.7	822.1	812.2
65°	792.5	777.6	753.0	730.7	718.4
67.5°	693.8	681.2	659.2	641.9	631.9
70°	602.4	592.5	570.1	552.9	543.2
72.5°	508.6	498.7	486.3	469.1	461.7
75°	414.6	409.9	397.3	382.7	387.7
77.5°	330.8	320.8	315.8	308.5	301.2
80°	246.9	244.4	239.4	232.0	227.0
82.5°	167.9	167.9	165.5	155.6	155.6
85°	101.1	98.8	96.4	88.8	86.4
87.5°	44.5	39.6	34.6	27.2	24.6
90°	0.8	11.0	18.4	23.1	24.8
92.5°	23.1	19.3	22.1	23.9	24.8
95°	59.8	29.4	35.8	40.5	39.6
97.5°	107.7	32.2	46.9	49.8	50.6
100°	163.0	36.9	52.5	59.8	61.6
102.5°	223.7	222.0	54.3	64.4	67.2
105°	279.8	307.5	56.2	66.3	69.9
107.5°	345.2	368.2	58.1	68.1	71.8
110°	407.9	427.1	161.2	69.1	72.7



TEST NUMBER: P926980

CATALOG NUMBER: DFN2DIP-HX4F0-070D040US830-FLLONL

**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°
112.5°	466.8	483.3	467.7	70.9	73.7
115°	529.3	545.0	568.0	141.8	75.6
117.5°	583.7	602.1	617.8	486.0	244.9
120°	644.5	658.2	674.8	686.0	561.6
122.5°	695.9	710.7	729.2	734.7	735.6
125°	748.4	760.5	777.9	784.4	787.2
127.5°	796.3	809.2	823.1	832.3	833.2
130°	841.5	856.3	866.3	876.4	875.6
132.5°	887.5	899.5	909.6	917.9	917.1
135°	926.2	941.0	949.2	958.4	956.6
137.5°	966.6	977.7	987.0	996.1	993.4
140°	1006.2	1013.7	1023.7	1032.0	1027.4
142.5°	1039.5	1045.9	1057.9	1065.1	1060.6
145°	1074.4	1073.5	1089.1	1095.6	1090.9
147.5°	1104.7	1102.0	1117.6	1122.2	1118.7
150°	1134.2	1127.8	1142.6	1148.1	1143.4
152.5°	1159.1	1151.7	1165.5	1171.1	1164.6
155°	1183.0	1174.8	1185.9	1191.3	1184.0
157.5°	1202.3	1195.0	1203.4	1209.8	1202.3
160°	1218.9	1213.4	1218.9	1224.4	1218.0
162.5°	1233.6	1228.2	1232.8	1239.2	1230.9
165°	1246.6	1241.1	1243.8	1250.2	1243.8
167.5°	1256.7	1251.1	1254.0	1260.4	1252.1
170°	1265.0	1259.5	1261.3	1267.8	1259.5
172.5°	1270.5	1265.0	1266.9	1273.3	1265.0
175°	1275.0	1268.6	1270.5	1276.9	1267.8
177.5°	1276.9	1270.5	1271.4	1277.9	1269.6
180°	1272.4	1272.4	1272.4	1272.4	1272.4



TEST NUMBER: P926980  
 CATALOG NUMBER: DFN2DIP-HX4F0-070D040US830-FLLONL

**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	10.69	11.69	11.52	12.54	13.61	10.26	11.26	11.09	12.11	13.17
	3H	12.36	13.26	13.21	14.12	15.21	11.89	12.79	12.73	13.65	14.74
	4H	12.96	13.81	13.82	14.67	15.77	12.48	13.33	13.34	14.20	15.30
	6H	13.37	14.15	14.24	15.02	16.14	12.89	13.67	13.76	14.55	15.66
	8H	13.47	14.22	14.35	15.11	16.23	13.00	13.74	13.88	14.64	15.75
	12H	13.53	14.24	14.41	15.13	16.26	13.05	13.76	13.93	14.64	15.78
4H	2H	11.17	12.02	12.03	12.89	13.99	10.83	11.67	11.69	12.54	13.64
	3H	13.05	13.76	13.93	14.66	15.77	12.66	13.36	13.53	14.27	15.38
	4H	13.77	14.42	14.66	15.31	16.46	13.37	14.01	14.25	14.91	16.05
	6H	14.29	14.85	15.20	15.77	16.92	13.89	14.44	14.79	15.36	16.51
	8H	14.45	14.97	15.35	15.89	17.04	14.04	14.56	14.94	15.47	16.63
	12H	14.53	15.00	15.45	15.93	17.10	14.11	14.58	15.03	15.51	16.67
8H	4H	13.98	14.50	14.88	15.42	16.57	13.62	14.14	14.52	15.06	16.21
	6H	14.62	15.05	15.55	16.01	17.16	14.25	14.69	15.19	15.64	16.80
	8H	14.84	15.22	15.78	16.17	17.35	14.47	14.85	15.41	15.80	16.98
	12H	14.98	15.32	15.92	16.26	17.48	14.59	14.93	15.54	15.87	17.10
12H	4H	13.97	14.44	14.90	15.38	16.54	13.62	14.09	14.54	15.02	16.19
	6H	14.65	15.03	15.59	15.98	17.16	14.30	14.68	15.24	15.63	16.80
	8H	14.90	15.24	15.84	16.18	17.40	14.54	14.88	15.49	15.82	17.04