

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: P919136

Luminaire Tested: DFN2DIP-HX4F0-080D090US935-FLLFLL

Issue Date: 11/21/2024

**Test Information**

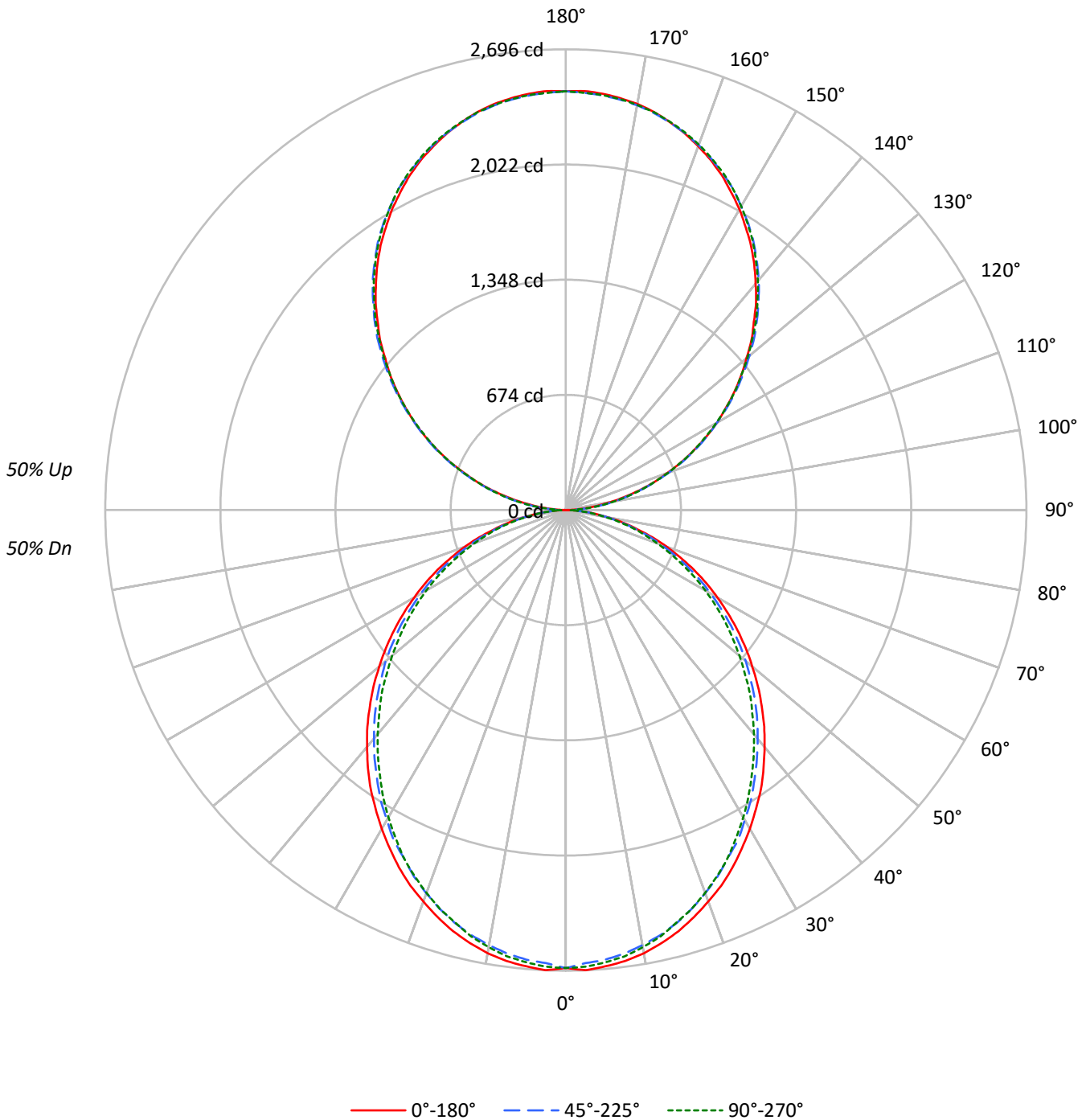
Test Method: LM-79-2019  
Report Number: P919136  
REPORT IS A COMBINATION OF REPORTS P899397 AND P896188  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-HX4F0-080D090US935-FLLFLL  
Description: 4 foot, Hexagon Define Geo, with Direct Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 13676.9 lumens  
Efficiency: N/A  
Efficacy: 107.1 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): 127.7  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9613  
Total Harmonic Distortion (THDi): 0.083  
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
RCR																				
0	107	107	107	107	99	99	99	99	83	83	83	69	69	69	56	56	56	50		
1	98	93	90	86	90	86	83	80	73	71	68	61	59	58	50	48	47	42		
2	89	82	75	70	82	75	70	66	64	60	57	53	51	48	44	42	40	35		
3	81	72	64	59	75	66	60	55	56	52	48	47	44	41	39	36	34	30		
4	74	63	56	50	68	59	52	46	50	45	41	42	38	35	35	32	29	26		
5	68	57	48	42	63	53	45	40	45	39	35	38	34	30	31	28	25	22		
6	63	51	43	37	58	47	40	35	40	35	31	34	30	26	28	25	22	20		
7	58	46	38	32	53	43	36	30	37	31	27	31	27	23	26	22	20	17		
8	54	42	34	29	50	39	32	27	33	28	24	28	24	21	24	20	18	16		
9	50	38	30	25	46	35	29	24	31	25	21	26	22	19	22	19	16	14		
10	47	35	28	23	43	33	26	22	28	23	19	24	20	17	20	17	15	13		

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

	0°	45°	90°
0°	1993	1993	1993
5°	1996	1965	1978
10°	1980	1939	1952
15°	1951	1907	1910
20°	1912	1863	1867
25°	1873	1810	1818
30°	1824	1761	1755
35°	1778	1703	1688
40°	1721	1645	1625
45°	1664	1586	1560
50°	1602	1524	1485
55°	1537	1453	1416
60°	1463	1368	1337
65°	1383	1281	1244
70°	1281	1174	1144
75°	1139	1046	1052
80°	970	883	875
85°	704	602	582

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 90°  
 Vertical Angle: 90°  
 Luminance: 1848 cd/sqm



TEST NUMBER: P919136

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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	252.3	1.8
10°-20°	709.8	5.2
20°-30°	1043.1	7.6
30°-40°	1211.4	8.9
40°-50°	1209.9	8.8
50°-60°	1055.0	7.7
60°-70°	779.9	5.7
70°-80°	441.2	3.2
80°-90°	123.4	0.9
90°-100°	151.6	1.1
100°-110°	481.8	3.5
110°-120°	824.6	6.0
120°-130°	1084.4	7.9
130°-140°	1217.2	8.9
140°-150°	1193.6	8.7
150°-160°	1001.3	7.3
160°-170°	664.0	4.9
170°-180°	232.1	1.7
0°-30°	2005.1	14.7
0°-40°	3216.5	23.5
0°-60°	5481.5	40.1
0°-90°	6826.0	49.9
90°-120°	1458.0	10.7
90°-150°	4953.4	36.2
90°-180°	6851.0	50.1
0°-180°	13676.9	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	2680	2680	2680	2680	2680	
5°	2680	2670	2642	2662	2657	254
15°	2551	2536	2502	2513	2500	719
25°	2309	2289	2245	2250	2245	1063
35°	1992	1966	1925	1910	1897	1244
45°	1621	1603	1564	1536	1526	1251
55°	1227	1211	1180	1150	1137	1097
65°	827	812	786	763	750	818
75°	433	428	415	400	405	462
85°	106	103	101	93	90	118
90°	2	27	72	68	70	13
95°	108	128	132	132	128	120
105°	445	451	455	459	459	469
115°	828	839	836	833	828	818
125°	1204	1222	1216	1209	1207	1076
135°	1557	1580	1584	1582	1576	1203
145°	1890	1905	1916	1919	1911	1181
155°	2161	2167	2174	2184	2177	995
165°	2351	2349	2349	2364	2353	663
175°	2446	2440	2436	2451	2438	232
180°	2451	2451	2451	2451	2451	



TEST NUMBER: P919136

CATALOG NUMBER: DFN2DIP-HX4F0-080D090US935-FLLFLL

**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°
0°	2680.1	2680.1	2680.1	2680.1	2680.1
2.5°	2695.7	2682.9	2654.5	2680.1	2675.2
5°	2680.1	2670.0	2641.6	2662.1	2657.2
7.5°	2662.1	2646.8	2618.4	2639.1	2634.0
10°	2634.0	2615.9	2585.0	2605.5	2597.9
12.5°	2595.1	2579.8	2548.9	2561.7	2556.6
15°	2551.4	2536.1	2502.4	2512.8	2500.0
17.5°	2497.2	2481.9	2448.2	2461.2	2448.2
20°	2437.9	2422.6	2386.5	2394.2	2384.0
22.5°	2378.9	2355.6	2321.9	2321.9	2316.8
25°	2309.1	2288.6	2244.9	2249.8	2244.9
27.5°	2231.7	2213.7	2180.3	2172.6	2159.8
30°	2154.6	2133.8	2095.3	2087.7	2077.2
32.5°	2072.1	2056.8	2015.4	1999.8	1989.5
35°	1992.2	1966.5	1925.2	1909.6	1896.8
37.5°	1901.9	1878.7	1837.5	1819.4	1806.5
40°	1809.3	1788.5	1747.2	1724.2	1713.8
42.5°	1719.1	1698.2	1657.2	1631.2	1616.0
45°	1621.2	1603.1	1564.3	1536.1	1525.8
47.5°	1525.8	1507.7	1466.4	1438.0	1422.6
50°	1425.1	1412.3	1376.1	1340.1	1327.2
52.5°	1327.2	1309.1	1275.8	1247.4	1229.3
55°	1226.8	1211.3	1180.4	1149.5	1136.6
57.5°	1126.3	1113.4	1079.8	1048.9	1038.4
60°	1025.6	1015.5	979.4	951.0	943.3
62.5°	927.7	909.7	884.0	858.3	847.9
65°	827.4	811.8	786.1	762.8	750.0
67.5°	724.3	711.2	688.2	670.2	659.8
70°	628.9	618.5	595.3	577.2	567.1
72.5°	531.0	520.6	507.7	489.7	482.1
75°	432.8	427.9	414.8	399.5	404.7
77.5°	345.3	334.9	329.8	322.1	314.4
80°	257.9	255.1	249.9	242.3	237.0
82.5°	175.3	175.3	172.8	162.4	162.4
85°	105.6	103.1	100.7	92.7	90.2
87.5°	46.5	41.3	36.1	28.4	25.7
90°	2.2	26.6	72.4	67.9	70.2
92.5°	45.8	62.1	64.3	66.5	66.5
95°	107.9	128.5	132.2	132.2	128.5
97.5°	179.5	198.7	206.9	206.9	206.9
100°	262.3	279.3	285.2	285.2	283.0
102.5°	349.5	362.0	370.1	372.4	370.1
105°	444.8	450.6	455.1	458.8	458.8
107.5°	539.3	548.2	548.2	549.7	539.3
110°	630.9	642.8	642.8	642.8	636.9



TEST NUMBER: P919136

CATALOG NUMBER: DFN2DIP-HX4F0-080D090US935-FLLFLL

**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°
112.5°	730.0	742.5	740.3	734.4	730.0
115°	827.5	839.3	835.6	833.4	827.5
117.5°	924.3	940.6	930.2	924.3	918.3
120°	1021.8	1038.0	1021.8	1021.8	1015.1
122.5°	1110.4	1131.2	1120.8	1114.9	1110.4
125°	1203.6	1222.0	1216.2	1209.4	1207.3
127.5°	1294.4	1317.3	1309.2	1300.4	1294.4
130°	1379.4	1406.0	1402.3	1397.8	1389.7
132.5°	1474.7	1495.4	1496.8	1486.5	1480.7
135°	1556.7	1579.6	1584.1	1581.8	1576.0
137.5°	1648.3	1666.8	1670.5	1669.0	1660.2
140°	1728.9	1747.3	1757.6	1757.6	1749.5
142.5°	1811.6	1830.1	1836.0	1838.2	1830.1
145°	1890.0	1904.7	1916.5	1918.7	1910.6
147.5°	1960.1	1978.6	1987.4	1991.1	1983.1
150°	2032.6	2045.1	2053.2	2059.9	2053.2
152.5°	2096.8	2109.4	2119.7	2127.9	2119.7
155°	2161.1	2167.0	2173.7	2184.0	2177.4
157.5°	2216.5	2220.9	2224.6	2239.4	2229.0
160°	2266.0	2270.5	2272.7	2285.2	2276.3
162.5°	2311.8	2311.8	2314.0	2328.1	2317.7
165°	2351.0	2348.7	2348.7	2363.5	2353.2
167.5°	2386.4	2379.8	2379.8	2394.5	2384.2
170°	2413.0	2407.1	2404.9	2419.7	2407.1
172.5°	2431.5	2425.6	2423.4	2438.2	2425.6
175°	2446.3	2440.3	2435.9	2450.7	2438.2
177.5°	2454.4	2448.5	2444.0	2456.6	2444.0
180°	2450.7	2450.7	2450.7	2450.7	2450.7



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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	9.66	10.52	10.62	11.49	12.77	9.23	10.09	10.18	11.06	12.33
	3H	11.32	12.09	12.29	13.07	14.37	10.85	11.62	11.82	12.60	13.90
	4H	11.91	12.64	12.89	13.62	14.93	11.43	12.17	12.42	13.15	14.45
	6H	12.31	12.98	13.30	13.97	15.29	11.83	12.51	12.83	13.50	14.81
	8H	12.41	13.05	13.41	14.06	15.38	11.94	12.58	12.94	13.59	14.90
	12H	12.46	13.07	13.47	14.07	15.41	11.98	12.59	12.99	13.59	14.93
4H	2H	10.12	10.85	11.11	11.84	13.14	9.78	10.51	10.76	11.49	12.80
	3H	11.99	12.60	12.99	13.61	14.93	11.59	12.20	12.59	13.22	14.54
	4H	12.70	13.26	13.71	14.27	15.61	12.30	12.86	13.30	13.86	15.20
	6H	13.22	13.70	14.24	14.73	16.07	12.81	13.29	13.83	14.32	15.66
	8H	13.37	13.82	14.39	14.84	16.20	12.96	13.41	13.98	14.43	15.78
	12H	13.44	13.85	14.48	14.89	16.25	13.02	13.43	14.06	14.47	15.82
8H	4H	12.90	13.35	13.92	14.37	15.73	12.54	12.99	13.56	14.01	15.37
	6H	13.53	13.90	14.58	14.97	16.32	13.17	13.54	14.21	14.61	15.96
	8H	13.75	14.08	14.81	15.13	16.50	13.38	13.71	14.44	14.76	16.13
	12H	13.89	14.17	14.94	15.22	16.63	13.50	13.79	14.56	14.84	16.25
12H	4H	12.89	13.29	13.92	14.33	15.69	12.53	12.94	13.57	13.98	15.34
	6H	13.56	13.89	14.61	14.94	16.31	13.21	13.54	14.26	14.59	15.96
	8H	13.81	14.09	14.86	15.14	16.55	13.45	13.74	14.50	14.78	16.19