

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: P913663

Luminaire Tested: DFN2DIP-HX4F0-070D090US927-RLLFLL

Issue Date: 11/21/2024

**Test Information**

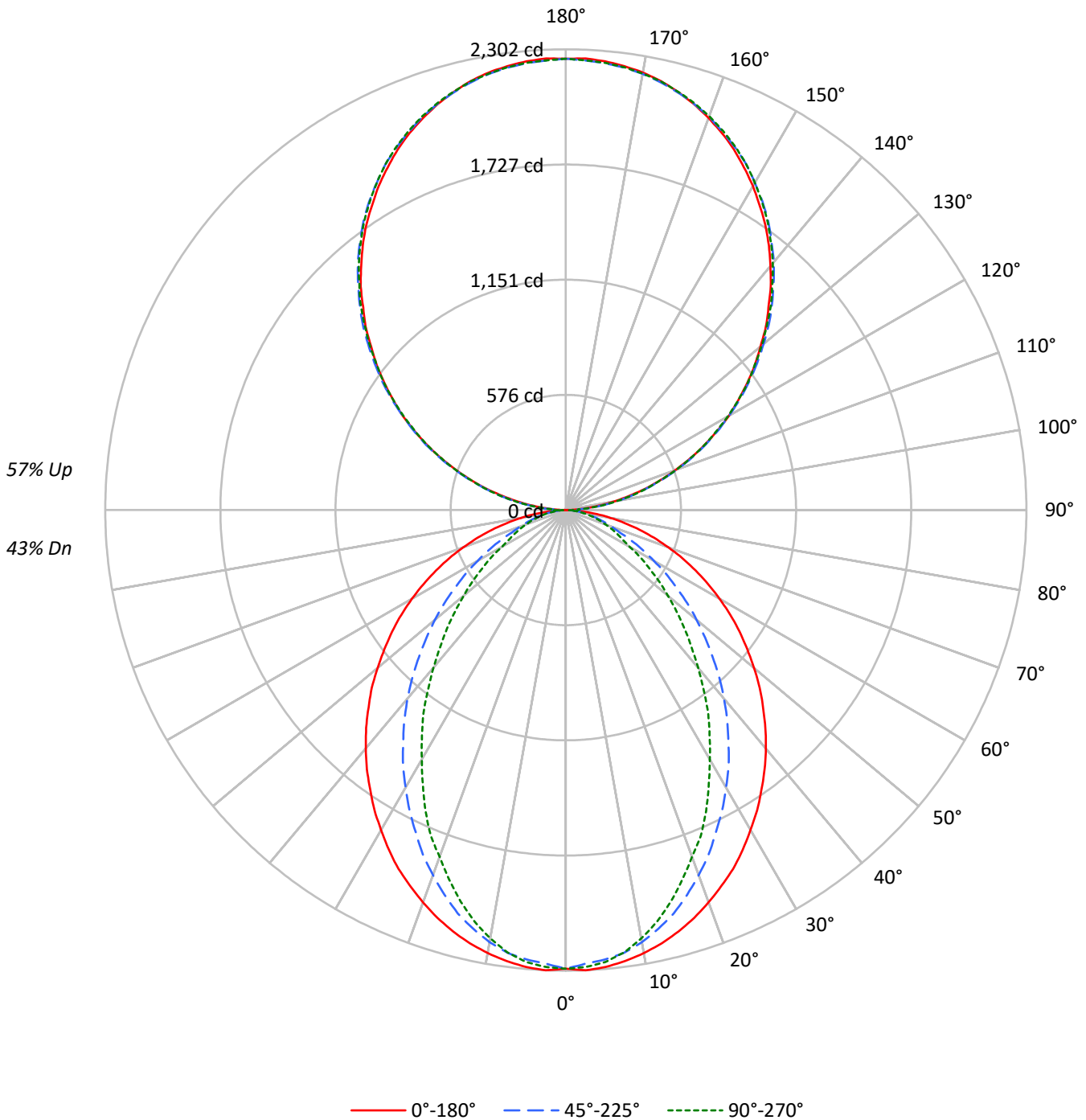
Test Method: LM-79-2019  
Report Number: P913663  
REPORT IS A COMBINATION OF REPORTS P899396 AND P896188  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-HX4F0-070D090US927-RLLFLL  
Description: 4 foot, Hexagon Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 11023.2 lumens  
Efficiency: N/A  
Efficacy: 94.0 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: General Diffuse  
  
Input Watts (W): 117.3  
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

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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	105	105	105	105	96	96	96	96	79	79	79	64	64	64	50	50	50	43				43
1	97	92	89	85	88	85	82	79	70	68	66	57	55	54	44	43	43	37				37
2	88	81	75	70	80	74	69	65	62	58	55	50	48	46	40	38	36	32				32
3	81	72	65	59	74	66	60	55	55	51	47	45	42	39	35	33	32	27				27
4	74	64	56	50	68	59	52	47	49	44	40	40	37	34	32	30	28	24				24
5	68	57	49	43	62	52	46	41	44	39	35	36	32	30	29	26	24	21				21
6	63	51	43	38	57	47	40	35	40	35	31	33	29	26	26	24	22	19				19
7	58	46	39	33	53	43	36	31	36	31	27	30	26	23	24	21	19	17				17
8	54	42	35	29	49	39	32	28	33	28	24	28	24	21	22	19	17	15				15
9	50	38	31	26	46	36	29	25	30	25	22	25	22	19	21	18	16	14				14
10	47	35	28	24	43	33	27	22	28	23	20	23	20	17	19	16	14	12				12

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

	0°	45°	90°
0°	1704	1704	1704
5°	1707	1677	1688
10°	1690	1645	1633
15°	1667	1590	1548
20°	1636	1516	1444
25°	1605	1432	1344
30°	1563	1346	1216
35°	1522	1253	1104
40°	1479	1158	975
45°	1431	1051	859
50°	1380	944	745
55°	1328	830	636
60°	1266	710	523
65°	1196	588	471
70°	1111	474	426
75°	1005	418	388
80°	850	352	337
85°	594	236	254

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 90°  
 Vertical Angle: 90°  
 Luminance: 1701 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	214.8	1.9
10°-20°	589.7	5.3
20°-30°	827.9	7.5
30°-40°	902.4	8.2
40°-50°	829.4	7.5
50°-60°	651.4	5.9
60°-70°	424.0	3.8
70°-80°	218.2	2.0
80°-90°	62.1	0.6
90°-100°	139.5	1.3
100°-110°	443.3	4.0
110°-120°	758.7	6.9
120°-130°	997.8	9.1
130°-140°	1120.0	10.2
140°-150°	1098.2	10.0
150°-160°	921.3	8.4
160°-170°	611.0	5.5
170°-180°	213.5	1.9
0°-30°	1632.3	14.8
0°-40°	2534.7	23.0
0°-60°	4015.5	36.4
0°-90°	4719.9	42.8
90°-120°	1341.5	12.2
90°-150°	4557.5	41.3
90°-180°	6303.0	57.2
0°-180°	11023.2	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	2292	2292	2292	2292	2292	
5°	2292	2282	2254	2273	2267	217
15°	2180	2157	2086	2047	2026	614
25°	1979	1912	1775	1690	1659	910
35°	1705	1599	1417	1286	1240	1067
45°	1394	1255	1037	890	840	1076
55°	1060	898	674	550	510	947
65°	716	548	361	290	284	709
75°	382	236	166	151	149	404
85°	89	46	39	39	39	102
90°	2	24	67	62	65	11
95°	99	118	122	122	118	110
105°	409	415	419	422	422	432
115°	761	772	769	767	761	753
125°	1107	1124	1119	1113	1111	990
135°	1432	1453	1458	1455	1450	1107
145°	1739	1752	1763	1765	1758	1086
155°	1988	1994	2000	2009	2003	915
165°	2163	2161	2161	2175	2165	610
175°	2251	2245	2241	2255	2243	214
180°	2255	2255	2255	2255	2255	



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**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°
0°	2291.9	2291.9	2291.9	2291.9	2291.9
2.5°	2302.2	2291.9	2269.0	2289.9	2285.7
5°	2291.9	2281.5	2254.5	2273.2	2267.0
7.5°	2273.2	2260.8	2231.8	2239.9	2229.6
10°	2248.3	2233.8	2192.4	2186.0	2173.7
12.5°	2217.2	2198.5	2142.5	2130.1	2107.2
15°	2179.8	2157.0	2086.5	2047.2	2026.5
17.5°	2136.3	2103.1	2015.9	1970.3	1937.1
20°	2086.5	2044.9	1941.3	1889.6	1843.8
22.5°	2032.7	1984.9	1864.5	1794.1	1763.1
25°	1978.7	1912.2	1775.4	1690.4	1659.2
27.5°	1914.5	1843.8	1692.4	1595.0	1547.2
30°	1846.0	1767.0	1601.1	1495.5	1439.4
32.5°	1779.6	1684.1	1514.2	1389.6	1337.7
35°	1704.9	1599.1	1416.7	1286.0	1240.2
37.5°	1632.4	1518.1	1325.4	1182.1	1130.4
40°	1555.5	1431.2	1229.9	1082.7	1028.7
42.5°	1476.8	1344.1	1134.6	981.0	929.3
45°	1393.8	1254.7	1037.1	889.7	839.9
47.5°	1315.0	1167.8	943.8	796.4	750.8
50°	1227.9	1080.7	852.5	709.2	665.9
52.5°	1142.7	987.1	765.3	628.4	589.1
55°	1059.8	898.0	674.0	549.7	510.3
57.5°	974.9	808.9	593.3	477.1	443.9
60°	887.7	721.8	508.1	402.5	369.2
62.5°	802.7	636.8	435.5	336.0	319.5
65°	715.6	547.5	360.9	290.5	284.1
67.5°	632.6	464.5	290.5	255.0	248.9
70°	545.5	383.7	240.5	219.8	211.4
72.5°	462.6	309.0	201.1	184.7	180.5
75°	381.6	236.3	165.9	151.4	149.4
77.5°	300.8	167.9	130.7	122.3	118.2
80°	226.0	120.3	99.5	91.3	91.3
82.5°	157.6	81.0	68.4	64.2	64.2
85°	89.1	45.6	39.4	39.4	39.4
87.5°	33.2	16.5	16.5	14.5	14.5
90°	2.1	24.5	66.6	62.5	64.6
92.5°	42.1	57.1	59.2	61.2	61.2
95°	99.3	118.3	121.7	121.7	118.3
97.5°	165.2	182.8	190.4	190.4	190.4
100°	241.3	257.0	262.4	262.4	260.4
102.5°	321.5	333.1	340.6	342.6	340.6
105°	409.2	414.6	418.7	422.2	422.2
107.5°	496.2	504.4	504.4	505.7	496.2
110°	580.5	591.4	591.4	591.4	586.0



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**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°
112.5°	671.6	683.2	681.1	675.7	671.6
115°	761.4	772.2	768.8	766.8	761.4
117.5°	850.4	865.4	855.9	850.4	844.9
120°	940.2	955.1	940.2	940.2	934.0
122.5°	1021.7	1040.8	1031.3	1025.8	1021.7
125°	1107.4	1124.3	1119.0	1112.8	1110.8
127.5°	1191.0	1212.0	1204.6	1196.4	1191.0
130°	1269.2	1293.6	1290.2	1286.1	1278.7
132.5°	1356.8	1375.9	1377.2	1367.7	1362.3
135°	1432.3	1453.3	1457.5	1455.4	1450.0
137.5°	1516.6	1533.6	1537.0	1535.6	1527.5
140°	1590.7	1607.7	1617.2	1617.2	1609.7
142.5°	1666.8	1683.8	1689.2	1691.3	1683.8
145°	1738.9	1752.5	1763.3	1765.4	1757.9
147.5°	1803.5	1820.4	1828.6	1832.0	1824.6
150°	1870.1	1881.7	1889.1	1895.2	1889.1
152.5°	1929.2	1940.8	1950.3	1957.8	1950.3
155°	1988.4	1993.8	1999.9	2009.4	2003.3
157.5°	2039.3	2043.4	2046.8	2060.4	2050.9
160°	2084.9	2089.0	2091.0	2102.5	2094.4
162.5°	2127.0	2127.0	2129.1	2142.0	2132.5
165°	2163.1	2161.0	2161.0	2174.6	2165.1
167.5°	2195.7	2189.6	2189.6	2203.1	2193.6
170°	2220.2	2214.7	2212.7	2226.3	2214.7
172.5°	2237.1	2231.7	2229.7	2243.3	2231.7
175°	2250.7	2245.3	2241.2	2254.9	2243.3
177.5°	2258.2	2252.8	2248.7	2260.3	2248.7
180°	2254.9	2254.9	2254.9	2254.9	2254.9



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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	8.29	9.06	9.31	10.09	11.46	4.26	5.04	5.28	6.06	7.44
	3H	9.96	10.66	11.00	11.69	13.08	5.45	6.14	6.48	7.18	8.57
	4H	10.57	11.22	11.61	12.26	13.66	5.90	6.55	6.94	7.59	8.99
	6H	10.99	11.59	12.04	12.63	14.05	6.22	6.82	7.27	7.86	9.27
	8H	11.11	11.69	12.17	12.75	14.15	6.31	6.88	7.37	7.94	9.35
	12H	11.17	11.72	12.24	12.77	14.20	6.35	6.89	7.41	7.95	9.38
4H	2H	8.30	8.96	9.35	9.99	11.39	4.85	5.51	5.90	6.55	7.95
	3H	10.13	10.67	11.18	11.74	13.15	6.20	6.74	7.26	7.81	9.22
	4H	10.82	11.32	11.88	12.37	13.81	6.75	7.24	7.81	8.30	9.74
	6H	11.33	11.76	12.40	12.84	14.27	7.16	7.59	8.24	8.67	10.10
	8H	11.50	11.90	12.58	12.98	14.42	7.29	7.69	8.37	8.76	10.21
	12H	11.60	11.96	12.69	13.05	14.49	7.36	7.72	8.45	8.80	10.25
8H	4H	10.78	11.18	11.85	12.25	13.70	7.02	7.42	8.10	8.49	9.94
	6H	11.35	11.68	12.44	12.79	14.23	7.54	7.87	8.64	8.98	10.43
	8H	11.56	11.85	12.67	12.95	14.41	7.73	8.02	8.84	9.12	10.58
	12H	11.70	11.95	12.81	13.05	14.55	7.85	8.10	8.96	9.20	10.70
12H	4H	10.73	11.09	11.82	12.18	13.63	7.02	7.39	8.12	8.47	9.92
	6H	11.32	11.61	12.42	12.71	14.17	7.59	7.88	8.69	8.98	10.44
	8H	11.54	11.79	12.65	12.89	14.39	7.80	8.05	8.91	9.15	10.65