

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: P924415

Luminaire Tested: DFN2DIP-HX3F0-060D030US950-FLLONL

Issue Date: 11/21/2024

**Test Information**

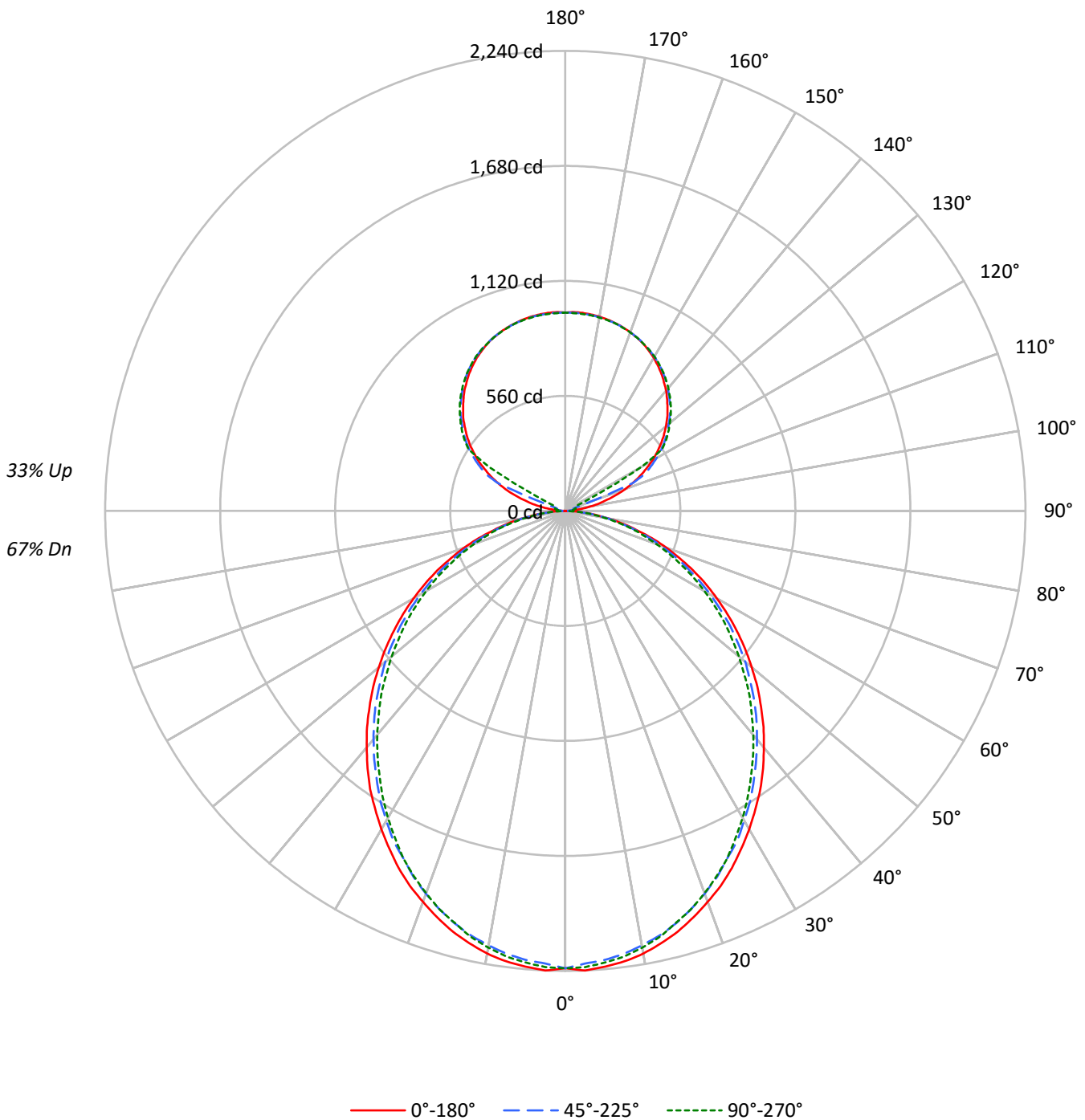
Test Method: LM-79-2019  
Report Number: P924415  
REPORT IS A COMBINATION OF REPORTS P900727 AND P897645  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-HX3F0-060D030US950-FLONL  
Description: 3 foot, Hexagon Define Geo, with Direct Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 8500.2 lumens  
Efficiency: N/A  
Efficacy: 106.8 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
Luminous Opening: Rectangular w/ Sides (W: 2.84' x L: 3.28' x H: 0.1')  
CIE Type: Semi-Direct  
  
Input Watts (W): 79.6  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9933  
Total Harmonic Distortion (THDi): 0.066  
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	111	111	111	111	105	105	105	105	93	93	93	82	82	82	71	71	71	67				67
1	102	97	93	90	95	92	88	85	81	79	76	72	70	68	63	62	60	56				56
2	92	85	79	73	87	80	75	70	71	67	63	63	60	57	56	53	51	47				47
3	84	75	67	61	79	71	64	58	63	58	53	56	52	48	49	46	43	40				40
4	77	66	58	52	72	63	55	50	56	50	45	50	45	41	44	40	37	34				34
5	71	59	51	44	67	56	48	43	50	44	39	45	40	36	40	36	33	30				30
6	66	53	45	39	62	50	43	37	45	39	34	41	35	32	36	32	29	26				26
7	61	48	40	34	57	46	38	33	41	35	30	37	32	28	33	29	26	23				23
8	56	44	36	30	53	42	34	29	38	31	27	34	29	25	30	26	23	21				21
9	53	40	32	27	50	38	31	26	35	29	24	31	26	23	28	24	21	19				19
10	49	37	29	24	46	35	28	24	32	26	22	29	24	20	26	22	19	17				17

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

	0°	45°	90°
0°	2580	2580	2580
5°	2583	2542	2560
10°	2561	2506	2524
15°	2522	2463	2468
20°	2470	2404	2411
25°	2418	2334	2346
30°	2354	2268	2263
35°	2292	2191	2175
40°	2217	2113	2092
45°	2142	2035	2006
50°	2059	1953	1907
55°	1973	1858	1816
60°	1875	1745	1712
65°	1769	1628	1588
70°	1633	1485	1455
75°	1445	1315	1330
80°	1219	1096	1095
85°	864	725	711

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 2142 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	209.6	2.5
10°-20°	589.8	6.9
20°-30°	866.8	10.2
30°-40°	1006.7	11.8
40°-50°	1005.5	11.8
50°-60°	876.7	10.3
60°-70°	648.1	7.6
70°-80°	366.7	4.3
80°-90°	98.5	1.2
90°-100°	31.9	0.4
100°-110°	118.7	1.4
110°-120°	314.9	3.7
120°-130°	522.3	6.1
130°-140°	554.8	6.5
140°-150°	515.6	6.1
150°-160°	414.5	4.9
160°-170°	267.1	3.1
170°-180°	91.9	1.1
0°-30°	1666.2	19.6
0°-40°	2673.0	31.4
0°-60°	4555.2	53.6
0°-90°	5668.5	66.7
90°-120°	465.5	5.5
90°-150°	2058.1	24.2
90°-180°	2832.0	33.3
0°-180°	8500.2	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	2227	2227	2227	2227	2227	
5°	2227	2219	2195	2212	2208	211
15°	2120	2108	2080	2088	2078	597
25°	1919	1902	1866	1870	1866	883
35°	1656	1634	1600	1587	1576	1034
45°	1347	1332	1300	1276	1268	1040
55°	1020	1007	981	955	945	912
65°	688	675	653	634	623	680
75°	360	356	345	332	336	384
85°	88	86	84	77	75	98
90°	1	8	14	18	19	8
95°	45	22	27	31	30	54
105°	212	233	43	50	53	227
115°	402	414	431	108	57	396
125°	568	577	591	596	598	507
135°	703	714	721	728	726	543
145°	816	815	827	832	828	510
155°	898	892	900	904	899	414
165°	946	942	944	949	944	267
175°	968	963	964	969	962	92
180°	966	966	966	966	966	



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**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°
0°	2227.2	2227.2	2227.2	2227.2	2227.2
2.5°	2240.2	2229.5	2205.8	2227.2	2223.1
5°	2227.2	2218.8	2195.2	2212.2	2208.1
7.5°	2212.2	2199.5	2175.9	2193.2	2188.9
10°	2188.9	2173.9	2148.1	2165.2	2158.8
12.5°	2156.6	2143.8	2118.2	2128.9	2124.6
15°	2120.2	2107.5	2079.5	2088.2	2077.5
17.5°	2075.2	2062.5	2034.6	2045.2	2034.6
20°	2025.9	2013.2	1983.2	1989.6	1981.2
22.5°	1976.9	1957.5	1929.6	1929.6	1925.3
25°	1918.9	1901.9	1865.5	1869.6	1865.5
27.5°	1854.6	1839.6	1811.8	1805.5	1794.9
30°	1790.6	1773.2	1741.2	1734.8	1726.2
32.5°	1721.9	1709.2	1674.8	1661.9	1653.3
35°	1655.6	1634.2	1599.9	1586.9	1576.2
37.5°	1580.6	1561.2	1527.0	1511.9	1501.2
40°	1503.5	1486.2	1452.0	1432.9	1424.2
42.5°	1428.5	1411.3	1377.2	1355.6	1342.9
45°	1347.2	1332.2	1299.9	1276.5	1267.9
47.5°	1267.9	1252.9	1218.6	1195.0	1182.2
50°	1184.3	1173.6	1143.7	1113.6	1102.9
52.5°	1102.9	1087.9	1060.2	1036.6	1021.6
55°	1019.5	1006.6	980.9	955.2	944.6
57.5°	936.0	925.3	897.3	871.7	863.0
60°	852.3	843.9	814.0	790.3	783.9
62.5°	770.9	755.9	734.6	713.2	704.6
65°	687.5	674.7	653.3	633.9	623.2
67.5°	601.9	591.0	571.9	556.9	548.3
70°	522.6	514.0	494.6	479.7	471.3
72.5°	441.2	432.6	422.0	407.0	400.6
75°	359.7	355.7	344.7	332.0	336.3
77.5°	287.0	278.4	274.0	267.7	261.3
80°	214.3	212.0	207.7	201.3	197.0
82.5°	145.7	145.7	143.6	135.0	135.0
85°	87.7	85.7	83.6	77.0	75.0
87.5°	38.6	34.3	30.0	23.7	21.4
90°	0.7	8.4	13.9	17.6	18.8
92.5°	17.6	14.7	16.8	18.2	18.8
95°	45.4	22.3	27.2	30.8	30.1
97.5°	81.8	24.5	35.6	37.8	38.4
100°	123.7	28.0	39.9	45.4	46.8
102.5°	169.8	168.5	41.2	48.8	51.0
105°	212.5	233.4	42.6	50.3	53.1
107.5°	262.1	279.5	44.1	51.7	54.6
110°	309.7	324.3	122.3	52.5	55.2



TEST NUMBER: P924415

CATALOG NUMBER: DFN2DIP-HX3F0-060D030US950-FLLONL

**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°
112.5°	354.4	366.9	355.1	53.8	55.9
115°	401.8	413.7	431.2	107.6	57.3
117.5°	443.1	457.1	469.0	369.0	185.9
120°	489.2	499.7	512.3	520.7	426.3
122.5°	528.3	539.6	553.6	557.7	558.5
125°	568.2	577.3	590.6	595.5	597.6
127.5°	604.5	614.3	624.9	631.8	632.5
130°	638.8	650.1	657.7	665.3	664.7
132.5°	673.7	682.9	690.5	696.8	696.1
135°	703.1	714.4	720.6	727.6	726.2
137.5°	733.8	742.2	749.3	756.2	754.1
140°	763.9	769.5	777.1	783.4	780.0
142.5°	789.1	794.0	803.1	808.6	805.2
145°	815.7	814.9	826.8	831.7	828.2
147.5°	838.7	836.6	848.5	851.9	849.2
150°	861.1	856.2	867.4	871.5	868.0
152.5°	879.9	874.3	884.8	889.0	884.2
155°	898.1	891.9	900.2	904.4	898.9
157.5°	912.8	907.3	913.6	918.4	912.8
160°	925.4	921.2	925.4	929.6	924.6
162.5°	936.5	932.3	935.9	940.7	934.4
165°	946.3	942.2	944.3	949.1	944.3
167.5°	954.0	949.8	951.9	956.9	950.6
170°	960.3	956.1	957.5	962.4	956.1
172.5°	964.5	960.3	961.7	966.6	960.3
175°	967.9	963.1	964.5	969.4	962.4
177.5°	969.4	964.5	965.3	970.1	963.8
180°	965.9	965.9	965.9	965.9	965.9



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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	11.93	12.97	12.73	13.79	14.80	11.51	12.54	12.30	13.36	14.37
	3H	13.60	14.53	14.41	15.36	16.40	13.13	14.06	13.94	14.89	15.93
	4H	14.19	15.07	15.02	15.91	16.96	13.72	14.60	14.55	15.44	16.49
	6H	14.59	15.40	15.43	16.25	17.31	14.12	14.93	14.96	15.78	16.84
	8H	14.70	15.47	15.55	16.34	17.40	14.23	15.00	15.08	15.87	16.93
	12H	14.75	15.49	15.61	16.35	17.44	14.28	15.01	15.13	15.87	16.96
4H	2H	12.41	13.29	13.25	14.13	15.18	12.07	12.95	12.90	13.79	14.84
	3H	14.29	15.02	15.13	15.89	16.96	13.90	14.63	14.74	15.50	16.57
	4H	15.00	15.67	15.86	16.54	17.63	14.60	15.27	15.46	16.14	17.23
	6H	15.52	16.10	16.39	16.99	18.09	15.11	15.69	15.99	16.59	17.68
	8H	15.67	16.21	16.55	17.10	18.21	15.26	15.80	16.14	16.69	17.80
	12H	15.75	16.23	16.64	17.14	18.26	15.33	15.82	16.23	16.73	17.84
8H	4H	15.21	15.75	16.09	16.64	17.75	14.85	15.39	15.73	16.28	17.39
	6H	15.84	16.29	16.74	17.22	18.33	15.48	15.93	16.38	16.86	17.97
	8H	16.06	16.45	16.97	17.38	18.50	15.69	16.09	16.61	17.01	18.14
	12H	16.19	16.54	17.11	17.45	18.63	15.81	16.16	16.73	17.08	18.25
12H	4H	15.20	15.69	16.10	16.60	17.71	14.85	15.34	15.75	16.25	17.36
	6H	15.87	16.26	16.78	17.19	18.32	15.52	15.92	16.43	16.84	17.97
	8H	16.11	16.46	17.03	17.38	18.56	15.76	16.11	16.68	17.02	18.20