

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: P924171

Luminaire Tested: DFN2DIP-4P4F0-060D030US950-FLLONL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P924171
REPORT IS A COMBINATION OF REPORTS P900605 AND P897523
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-4P4F0-060D030US950-FLLONL
Description: 4 foot, 90deg - 4way Define Geo, with Direct Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

Summary

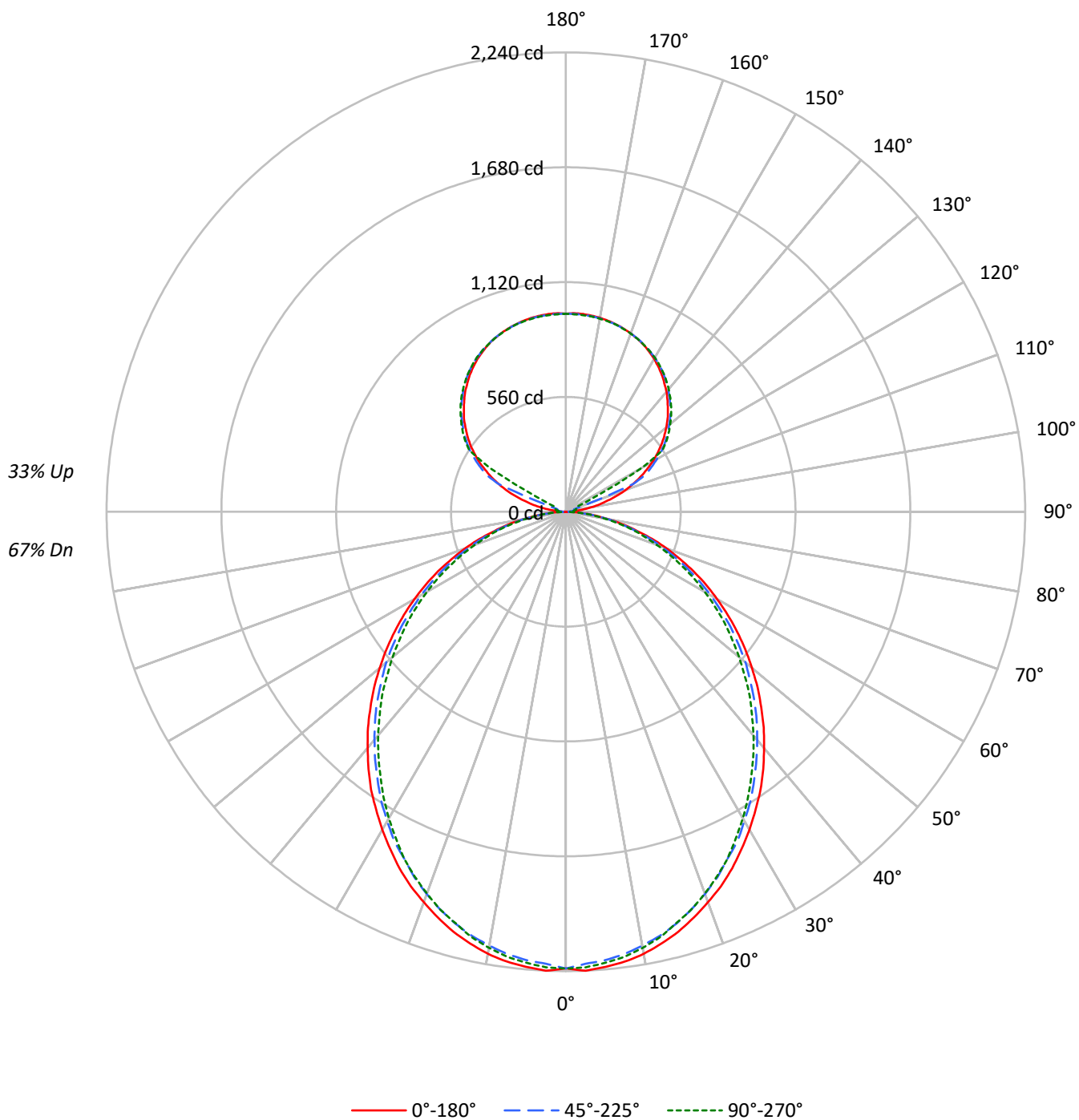
Lumens per Lamp: N/A
Luminaire Lumens: 8500.2 lumens
Efficiency: N/A
Efficacy: 100.6 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 4.07' x L: 4.07' x H: 0.1')
CIE Type: Semi-Direct

Input Watts (W): 84.5
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

TEST NUMBER: P924171

CATALOG NUMBER: DFN2DIP-4P4F0-060D030US950-FLLONL

Luminous Intensity Polar Plot



TEST NUMBER: P924171

CATALOG NUMBER: DFN2DIP-4P4F0-060D030US950-FLONL

COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:

RF	20				20				20				20				20
RC	80				70				50				30				10
RW	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10
RCR																	
0	111	111	111	111	105	105	105	105	93	93	93	82	82	82	71	71	71
1	102	97	93	90	95	92	88	85	81	79	76	72	70	68	63	62	60
2	92	85	79	73	87	80	75	70	71	67	63	63	60	57	56	53	51
3	84	75	67	61	79	71	64	58	63	58	53	56	52	48	49	46	43
4	77	66	58	52	72	63	55	50	56	50	45	50	45	41	44	40	37
5	71	59	51	44	67	56	48	43	50	44	39	45	40	36	40	36	33
6	66	53	45	39	62	50	43	37	45	39	34	41	35	32	36	32	29
7	61	48	40	34	57	46	38	33	41	35	30	37	32	28	33	29	26
8	56	44	36	30	53	42	34	29	38	31	27	34	29	25	30	26	23
9	53	40	32	27	50	38	31	26	35	29	24	31	26	23	28	24	21
10	49	37	29	24	46	35	28	24	32	26	22	29	24	20	26	22	19

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	1445	1445	1445
5°	1447	1425	1435
10°	1436	1406	1416
15°	1415	1384	1386
20°	1386	1352	1356
25°	1358	1314	1320
30°	1323	1279	1275
35°	1289	1237	1227
40°	1248	1195	1182
45°	1206	1153	1135
50°	1161	1108	1081
55°	1114	1057	1032
60°	1061	996	976
65°	1003	933	909
70°	929	856	837
75°	826	765	772
80°	703	648	646
85°	510	445	436

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 1206 cd/sqm

TEST NUMBER: P924171

CATALOG NUMBER: DFN2DIP-4P4F0-060D030US950-FLLONL

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	

TEST NUMBER: P924171

CATALOG NUMBER: DFN2DIP-4P4F0-060D030US950-FLLONL

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: P924171

CATALOG NUMBER: DFN2DIP-4P4F0-060D030US950-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	9.98	11.02	10.78	11.84	12.85	9.54	10.57	10.34	11.40	12.41
	3H	11.66	12.59	12.47	13.42	14.46	11.17	12.10	11.98	12.93	13.97
	4H	12.26	13.14	13.09	13.98	15.03	11.77	12.64	12.60	13.48	14.53
	6H	12.67	13.48	13.52	14.33	15.40	12.17	12.98	13.02	13.83	14.89
	8H	12.79	13.56	13.64	14.42	15.49	12.28	13.06	13.13	13.92	14.99
	12H	12.84	13.58	13.70	14.44	15.53	12.33	13.07	13.19	13.93	15.02
4H	2H	10.47	11.34	11.30	12.18	13.23	10.11	10.99	10.94	11.83	12.88
	3H	12.35	13.09	13.20	13.96	15.02	11.95	12.68	12.79	13.55	14.62
	4H	13.08	13.75	13.94	14.62	15.71	12.66	13.32	13.51	14.19	15.29
	6H	13.61	14.19	14.48	15.08	16.18	13.18	13.75	14.05	14.65	15.75
	8H	13.77	14.31	14.64	15.19	16.30	13.33	13.87	14.21	14.76	15.87
	12H	13.85	14.34	14.75	15.25	16.36	13.40	13.89	14.30	14.80	15.91
8H	4H	13.29	13.83	14.17	14.72	15.83	12.91	13.45	13.79	14.34	15.45
	6H	13.94	14.38	14.84	15.31	16.42	13.55	14.00	14.46	14.93	16.04
	8H	14.16	14.56	15.08	15.48	16.61	13.77	14.17	14.68	15.09	16.22
	12H	14.31	14.65	15.22	15.57	16.75	13.89	14.24	14.81	15.16	16.34
12H	4H	13.28	13.77	14.18	14.68	15.79	12.92	13.40	13.81	14.31	15.43
	6H	13.97	14.36	14.88	15.29	16.41	13.60	13.99	14.51	14.92	16.04
	8H	14.22	14.57	15.14	15.49	16.67	13.84	14.19	14.76	15.11	16.29