

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: P918659

Luminaire Tested: DFN2DIP-4P4F0-030D070US935-FLONL

Issue Date: 11/21/2024

**Test Information**

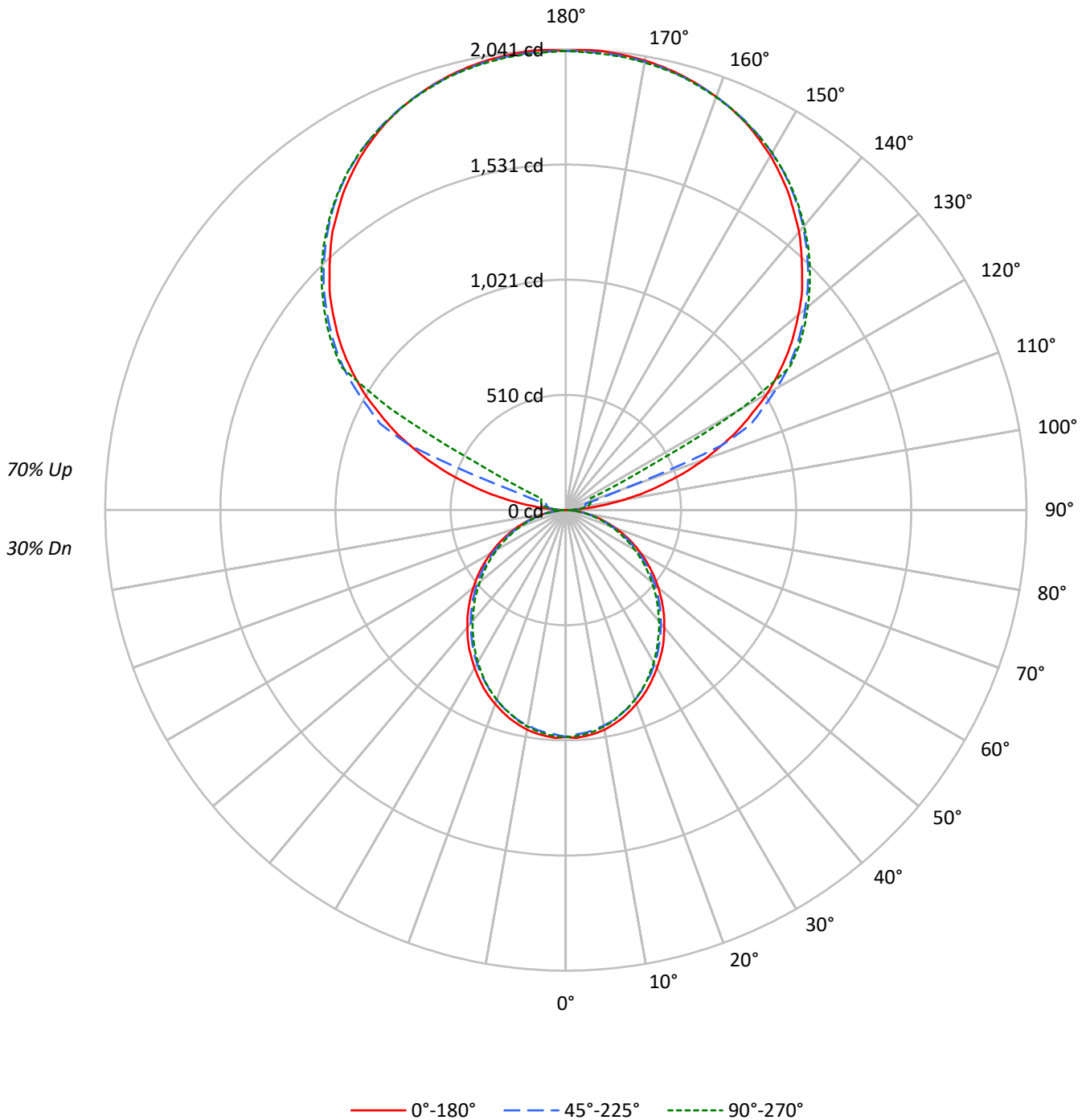
Test Method: LM-79-2019  
Report Number: P918659  
REPORT IS A COMBINATION OF REPORTS P900647 AND P897523  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-4P4F0-030D070US935-FLLONL  
Description: 4 foot, 90deg - 4way Define Geo, with Direct Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 8523.9 lumens  
Efficiency: N/A  
Efficacy: 96.0 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-Indirect  
  
Input Watts (W): 88.8  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.983  
Total Harmonic Distortion (THDi): 0.073  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT

TEST NUMBER: P918659  
CATALOG NUMBER: DFN2DIP-4P4F0-030D070US935-FLLONL

### Luminous Intensity Polar Plot





TEST NUMBER: P918659

CATALOG NUMBER: DFN2DIP-4P4F0-030D070US935-FLLONL

**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	102	102	102	102	92	92	92	92	72	72	72	54	54	54	38	38	38	38	38	38	30
1	93	89	85	82	84	80	77	74	63	61	59	48	46	45	33	33	32	33	33	32	25
2	85	78	72	67	76	70	65	61	55	52	49	42	40	38	29	28	27	29	28	27	21
3	77	68	61	56	69	62	56	51	49	45	41	37	34	32	26	24	23	26	24	23	18
4	71	60	53	47	63	54	48	43	43	39	35	33	30	27	23	21	20	23	21	20	15
5	65	54	46	40	58	48	42	37	39	34	30	29	26	23	21	19	17	21	19	17	13
6	60	48	40	35	53	43	37	32	35	30	26	27	23	20	19	17	15	19	17	15	12
7	55	43	35	30	49	39	32	28	31	26	23	24	21	18	17	15	13	17	15	13	10
8	51	39	32	26	46	35	29	24	28	24	20	22	19	16	16	14	12	16	14	12	9
9	47	36	28	23	42	32	26	22	26	21	18	20	17	14	15	12	11	15	12	11	8
10	44	32	26	21	40	30	23	19	24	19	16	19	15	13	14	11	10	14	11	10	8

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

	0°	45°	90°
0°	652	652	652
5°	653	643	647
10°	648	635	639
15°	638	624	626
20°	626	610	612
25°	613	593	596
30°	597	577	575
35°	582	558	554
40°	563	539	533
45°	544	520	512
50°	524	500	488
55°	503	477	466
60°	479	450	440
65°	453	421	410
70°	419	387	378
75°	373	345	349
80°	317	292	292
85°	230	201	196

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 90°  
 Vertical Angle: 90°  
 Luminance: 1049 cd/sqm



TEST NUMBER: P918659

CATALOG NUMBER: DFN2DIP-4P4F0-030D070US935-FLLONL

**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	94.6	1.1
10°-20°	266.2	3.1
20°-30°	391.1	4.6
30°-40°	454.3	5.3
40°-50°	453.7	5.3
50°-60°	395.6	4.6
60°-70°	292.5	3.4
70°-80°	165.5	1.9
80°-90°	47.3	0.6
90°-100°	67.1	0.8
100°-110°	250.0	2.9
110°-120°	663.1	7.8
120°-130°	1099.8	12.9
130°-140°	1168.3	13.7
140°-150°	1085.8	12.7
150°-160°	872.9	10.2
160°-170°	562.5	6.6
170°-180°	193.6	2.3
0°-30°	751.9	8.8
0°-40°	1206.2	14.2
0°-60°	2055.6	24.1
0°-90°	2560.8	30.0
90°-120°	980.2	11.5
90°-150°	4334.1	50.8
90°-180°	5963.0	70.0
0°-180°	8523.9	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	1005	1005	1005	1005	1005	
5°	1005	1001	991	998	996	95
15°	957	951	938	942	938	269
25°	866	858	842	844	842	398
35°	747	737	722	716	711	467
45°	608	601	587	576	572	469
55°	460	454	443	431	426	411
65°	310	304	295	286	281	307
75°	162	160	156	150	152	173
85°	40	39	38	35	34	44
90°	1	18	29	37	40	8
95°	96	47	57	65	63	113
105°	448	492	90	106	112	478
115°	846	871	908	227	121	833
125°	1196	1216	1244	1254	1258	1067
135°	1481	1504	1517	1532	1529	1144
145°	1718	1716	1741	1751	1744	1074
155°	1891	1878	1896	1904	1893	872
165°	1993	1984	1988	1999	1988	563
175°	2038	2028	2031	2041	2027	194
180°	2034	2034	2034	2034	2034	



TEST NUMBER: P918659

CATALOG NUMBER: DFN2DIP-4P4F0-030D070US935-FLLONL

**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°
0°	1005.0	1005.0	1005.0	1005.0	1005.0
2.5°	1010.9	1006.1	995.4	1005.0	1003.2
5°	1005.0	1001.3	990.6	998.3	996.4
7.5°	998.3	992.6	981.9	989.7	987.7
10°	987.7	980.9	969.4	977.1	974.2
12.5°	973.2	967.4	955.9	960.6	958.7
15°	956.7	951.1	938.4	942.3	937.5
17.5°	936.4	930.7	918.1	922.9	918.1
20°	914.2	908.4	894.9	897.8	894.0
22.5°	892.1	883.4	870.7	870.7	868.7
25°	865.9	858.2	841.8	843.7	841.8
27.5°	836.9	830.1	817.6	814.8	809.9
30°	808.0	800.2	785.7	782.8	778.9
32.5°	777.1	771.3	755.8	749.9	746.1
35°	747.1	737.4	721.9	716.1	711.3
37.5°	713.3	704.6	689.1	682.3	677.4
40°	678.5	670.7	655.2	646.6	642.7
42.5°	644.6	636.9	621.5	611.7	606.0
45°	608.0	601.1	586.6	576.0	572.1
47.5°	572.1	565.4	549.9	539.2	533.5
50°	534.4	529.6	516.1	502.6	497.7
52.5°	497.7	490.9	478.5	467.8	461.0
55°	460.1	454.3	442.6	431.1	426.3
57.5°	422.3	417.5	404.9	393.3	389.4
60°	384.6	380.8	367.3	356.6	353.8
62.5°	347.9	341.1	331.5	321.8	318.0
65°	310.3	304.4	294.8	286.1	281.3
67.5°	271.6	266.7	258.0	251.3	247.5
70°	235.8	232.0	223.3	216.5	212.7
72.5°	199.1	195.2	190.4	183.7	180.8
75°	162.3	160.5	155.6	149.8	151.8
77.5°	129.5	125.6	123.6	120.8	118.0
80°	96.7	95.7	93.7	90.8	88.9
82.5°	65.7	65.7	64.8	60.9	60.9
85°	39.6	38.7	37.7	34.8	33.8
87.5°	17.4	15.5	13.5	10.7	9.6
90°	1.4	17.7	29.4	36.9	39.7
92.5°	36.9	30.9	35.3	38.3	39.7
95°	95.6	47.0	57.3	64.8	63.3
97.5°	172.1	51.6	75.0	79.6	80.9
100°	260.6	58.9	83.9	95.6	98.6
102.5°	357.6	354.8	86.9	103.0	107.5
105°	447.5	491.6	89.8	105.9	111.8
107.5°	551.9	588.7	92.8	108.9	114.9
110°	652.1	682.9	257.6	110.5	116.2



TEST NUMBER: P918659

CATALOG NUMBER: DFN2DIP-4P4F0-030D070US935-FLLONL

**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°
112.5°	746.3	772.7	747.7	113.2	117.8
115°	846.3	871.2	908.1	226.7	120.8
117.5°	933.1	962.5	987.7	777.1	391.5
120°	1030.3	1052.3	1078.9	1096.6	897.8
122.5°	1112.6	1136.2	1165.8	1174.5	1176.0
125°	1196.5	1215.7	1243.7	1254.0	1258.3
127.5°	1273.1	1293.6	1315.9	1330.6	1332.0
130°	1345.2	1368.8	1384.9	1401.2	1399.8
132.5°	1418.8	1438.0	1454.1	1467.4	1466.0
135°	1480.7	1504.2	1517.4	1532.2	1529.3
137.5°	1545.3	1563.1	1577.9	1592.6	1588.2
140°	1608.6	1620.5	1636.6	1649.8	1642.5
142.5°	1661.7	1672.1	1691.1	1702.8	1695.5
145°	1717.7	1716.1	1741.1	1751.4	1744.1
147.5°	1766.1	1761.8	1786.7	1794.1	1788.3
150°	1813.3	1803.0	1826.6	1835.3	1828.0
152.5°	1853.0	1841.2	1863.3	1872.2	1861.9
155°	1891.3	1878.1	1895.7	1904.5	1892.8
157.5°	1922.2	1910.5	1923.7	1934.1	1922.2
160°	1948.8	1939.8	1948.8	1957.5	1947.1
162.5°	1972.2	1963.4	1970.7	1981.1	1967.8
165°	1992.8	1984.1	1988.4	1998.7	1988.4
167.5°	2009.1	2000.1	2004.7	2015.0	2001.7
170°	2022.3	2013.4	2016.4	2026.7	2013.4
172.5°	2031.1	2022.3	2025.3	2035.6	2022.3
175°	2038.4	2028.1	2031.1	2041.3	2026.7
177.5°	2041.3	2031.1	2032.6	2043.0	2029.6
180°	2034.0	2034.0	2034.0	2034.0	2034.0



TEST NUMBER: P918659  
 CATALOG NUMBER: DFN2DIP-4P4F0-030D070US935-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	3.60	4.30	4.71	5.41	6.94	3.15	3.86	4.26	4.97	6.50
	3H	5.25	5.88	6.37	7.00	8.55	4.76	5.39	5.88	6.51	8.06
	4H	5.84	6.44	6.96	7.55	9.10	5.34	5.94	6.47	7.06	8.61
	6H	6.23	6.78	7.37	7.90	9.47	5.73	6.28	6.87	7.40	8.97
	8H	6.33	6.86	7.48	7.99	9.55	5.83	6.36	6.97	7.49	9.05
	12H	6.38	6.88	7.52	8.01	9.59	5.87	6.37	7.02	7.50	9.08
4H	2H	4.04	4.64	5.18	5.76	7.31	3.69	4.29	4.82	5.40	6.95
	3H	5.90	6.40	7.04	7.54	9.11	5.49	5.99	6.63	7.13	8.70
	4H	6.61	7.07	7.76	8.20	9.79	6.19	6.65	7.33	7.78	9.36
	6H	7.12	7.52	8.27	8.67	10.25	6.69	7.09	7.84	8.24	9.81
	8H	7.27	7.64	8.42	8.79	10.38	6.83	7.20	7.99	8.35	9.94
	12H	7.34	7.67	8.51	8.83	10.43	6.89	7.22	8.06	8.38	9.98
8H	4H	6.80	7.16	7.95	8.31	9.90	6.42	6.79	7.57	7.93	9.53
	6H	7.43	7.73	8.60	8.92	10.51	7.04	7.35	8.22	8.54	10.12
	8H	7.65	7.92	8.83	9.08	10.69	7.26	7.52	8.43	8.69	10.30
	12H	7.78	8.01	8.96	9.17	10.82	7.37	7.60	8.55	8.76	10.41
12H	4H	6.77	7.11	7.94	8.26	9.86	6.41	6.74	7.57	7.90	9.49
	6H	7.46	7.72	8.63	8.89	10.50	7.08	7.35	8.26	8.52	10.13
	8H	7.69	7.93	8.88	9.09	10.73	7.31	7.55	8.50	8.71	10.35