

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: P921471

Luminaire Tested: DFN2DIP-4P4F0-070D040US940-FLLONL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P921471
REPORT IS A COMBINATION OF REPORTS P900619 AND P897523
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-4P4F0-070D040US940-FLLONL
Description: 4 foot, 90deg - 4way Define Geo, with Direct Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

Summary

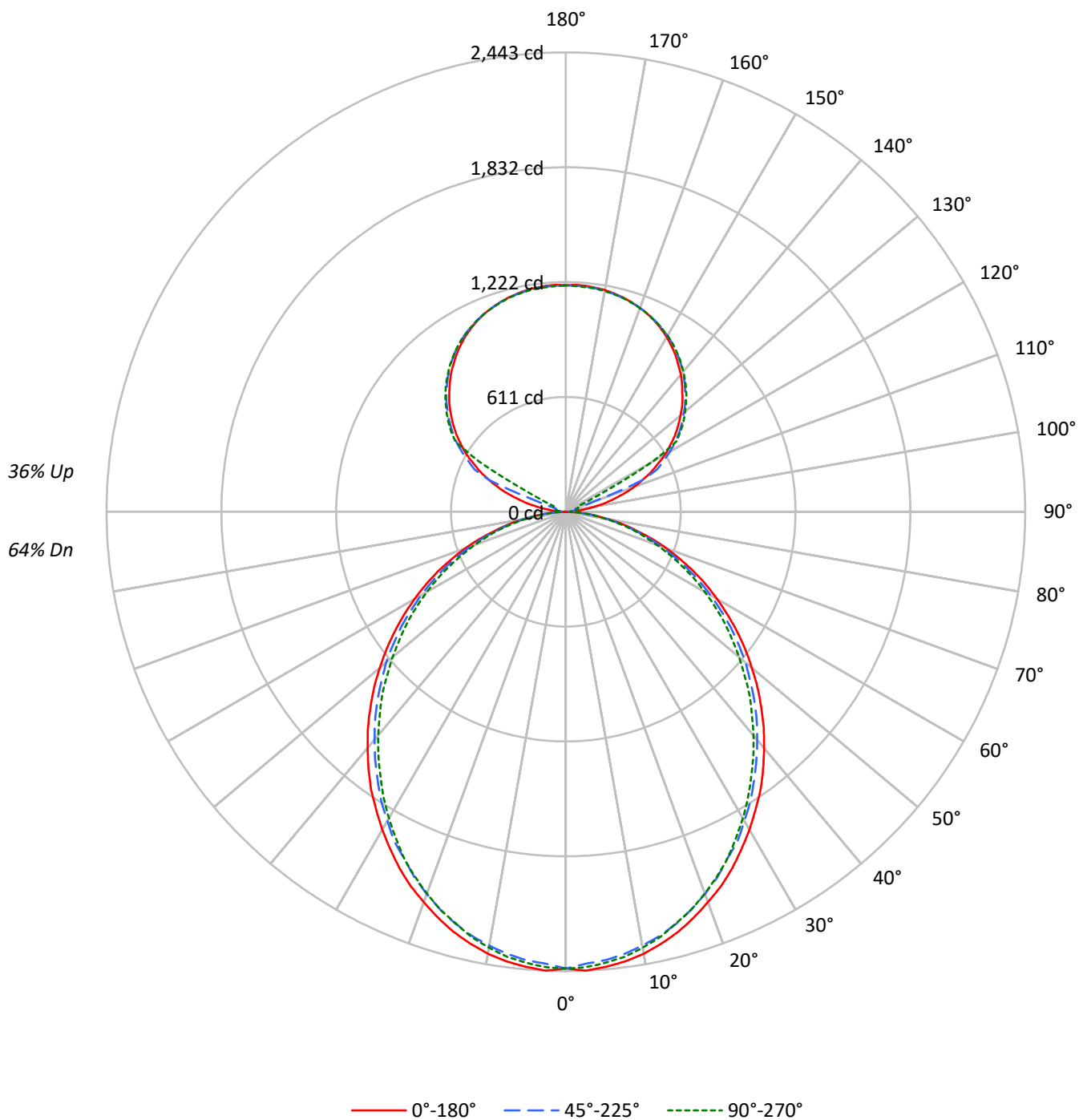
Lumens per Lamp: N/A
Luminaire Lumens: 9710.8 lumens
Efficiency: N/A
Efficacy: 92.4 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 4.07' x L: 4.07' x H: 0.1')
CIE Type: Semi-Direct

Input Watts (W): 105.1
Input Voltage (V):
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.9789
Total Harmonic Distortion (THDi): 0.074
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 24 FT

TEST NUMBER: P921471

CATALOG NUMBER: DFN2DIP-4P4F0-070D040US940-FLLONL

Luminous Intensity Polar Plot



TEST NUMBER: P921471

CATALOG NUMBER: DFN2DIP-4P4F0-070D040US940-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	110	110	110	110	104	104	104	104	91	91	91	79	79	79	69	69	69
1	101	96	92	89	94	91	87	84	80	77	75	70	68	66	61	59	58
2	92	84	78	73	86	79	74	69	70	66	62	61	58	55	53	51	49
3	84	74	67	61	78	70	63	58	62	57	52	54	50	47	47	44	42
4	77	66	58	51	72	62	55	49	55	49	45	48	44	40	42	39	36
5	71	59	50	44	66	55	48	42	49	43	39	44	39	35	38	34	31
6	65	53	44	38	61	50	42	37	44	38	34	39	34	31	35	31	28
7	60	48	39	34	56	45	38	32	40	34	30	36	31	27	32	28	25
8	56	43	35	30	52	41	34	29	37	31	27	33	28	24	29	25	22
9	52	40	32	27	49	38	31	26	34	28	24	30	25	22	27	23	20
10	49	36	29	24	46	35	28	23	31	26	22	28	23	20	25	21	18

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	1576	1576	1576
5°	1578	1554	1565
10°	1566	1534	1544
15°	1543	1509	1512
20°	1512	1474	1478
25°	1481	1433	1440
30°	1442	1394	1390
35°	1406	1349	1338
40°	1361	1303	1289
45°	1316	1257	1238
50°	1266	1209	1179
55°	1215	1153	1126
60°	1157	1086	1064
65°	1093	1018	991
70°	1013	934	913
75°	901	834	842
80°	766	707	704
85°	556	486	475

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 1316 cd/sqm

TEST NUMBER: P921471

CATALOG NUMBER: DFN2DIP-4P4F0-070D040US940-FLLONL

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	228.6	2.4
10°-20°	643.2	6.6
20°-30°	945.2	9.7
30°-40°	1097.8	11.3
40°-50°	1096.5	11.3
50°-60°	956.1	9.8
60°-70°	706.8	7.3
70°-80°	399.9	4.1
80°-90°	107.7	1.1
90°-100°	39.7	0.4
100°-110°	148.0	1.5
110°-120°	392.4	4.0
120°-130°	650.9	6.7
130°-140°	691.4	7.1
140°-150°	642.6	6.6
150°-160°	516.6	5.3
160°-170°	332.9	3.4
170°-180°	114.6	1.2
0°-30°	1817.0	18.7
0°-40°	2914.9	30.0
0°-60°	4967.4	51.2
0°-90°	6181.7	63.7
90°-120°	580.1	6.0
90°-150°	2565.0	26.4
90°-180°	3529.0	36.3
0°-180°	9710.8	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	2429	2429	2429	2429	2429	
5°	2429	2420	2394	2412	2408	231
15°	2312	2298	2268	2277	2266	651
25°	2093	2074	2034	2039	2034	963
35°	1805	1782	1745	1730	1719	1127
45°	1469	1453	1418	1392	1383	1134
55°	1112	1098	1070	1042	1030	994
65°	750	736	712	691	680	741
75°	392	388	376	362	367	419
85°	96	94	91	84	82	107
90°	1	10	17	22	24	9
95°	56	28	34	38	38	67
105°	265	291	53	63	66	283
115°	501	516	537	134	72	493
125°	708	720	736	742	745	632
135°	876	890	898	907	905	677
145°	1016	1016	1030	1036	1032	636
155°	1119	1112	1122	1127	1120	516
165°	1179	1174	1177	1183	1177	333
175°	1206	1200	1202	1208	1199	115
180°	1204	1204	1204	1204	1204	

TEST NUMBER: P921471

CATALOG NUMBER: DFN2DIP-4P4F0-070D040US940-FLLONL

CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	2428.8	2428.8	2428.8	2428.8	2428.8
2.5°	2442.9	2431.2	2405.5	2428.8	2424.3
5°	2428.8	2419.7	2393.9	2412.4	2408.0
7.5°	2412.4	2398.5	2372.8	2391.7	2386.9
10°	2386.9	2370.5	2342.5	2361.2	2354.2
12.5°	2351.7	2337.9	2309.9	2321.5	2316.8
15°	2312.1	2298.2	2267.7	2277.2	2265.5
17.5°	2263.0	2249.2	2218.7	2230.3	2218.7
20°	2209.2	2195.4	2162.7	2169.6	2160.4
22.5°	2155.7	2134.7	2104.2	2104.2	2099.4
25°	2092.6	2073.9	2034.3	2038.8	2034.3
27.5°	2022.4	2006.1	1975.9	1968.9	1957.2
30°	1952.6	1933.7	1898.8	1891.9	1882.4
32.5°	1877.7	1863.9	1826.4	1812.3	1802.9
35°	1805.4	1782.1	1744.6	1730.5	1718.9
37.5°	1723.6	1702.5	1665.1	1648.8	1637.1
40°	1639.6	1620.8	1583.3	1562.5	1553.1
42.5°	1557.8	1539.0	1501.8	1478.3	1464.4
45°	1469.1	1452.8	1417.6	1392.0	1382.6
47.5°	1382.6	1366.3	1328.8	1303.1	1289.2
50°	1291.5	1279.8	1247.1	1214.4	1202.7
52.5°	1202.7	1186.4	1156.2	1130.4	1114.0
55°	1111.8	1097.7	1069.7	1041.7	1030.0
57.5°	1020.7	1009.0	978.5	950.5	941.1
60°	929.4	920.2	887.6	861.8	854.9
62.5°	840.7	824.4	801.1	777.8	768.4
65°	749.8	735.7	712.4	691.3	679.7
67.5°	656.4	644.5	623.7	607.3	597.9
70°	569.9	560.5	539.4	523.1	513.9
72.5°	481.2	471.8	460.1	443.8	436.8
75°	392.3	387.8	375.9	362.0	366.8
77.5°	313.0	303.5	298.8	291.9	285.0
80°	233.6	231.2	226.5	219.5	214.8
82.5°	158.8	158.8	156.6	147.2	147.2
85°	95.7	93.5	91.2	84.0	81.8
87.5°	42.1	37.5	32.7	25.8	23.3
90°	0.8	10.4	17.4	21.8	23.5
92.5°	21.8	18.3	20.9	22.6	23.5
95°	56.5	27.8	33.9	38.3	37.5
97.5°	101.9	30.5	44.4	47.1	47.9
100°	154.2	34.9	49.7	56.5	58.3
102.5°	211.6	210.0	51.4	60.9	63.6
105°	264.7	291.0	53.1	62.7	66.2
107.5°	326.6	348.4	54.9	64.5	67.9
110°	385.9	404.1	152.5	65.4	68.8

TEST NUMBER: P921471

CATALOG NUMBER: DFN2DIP-4P4F0-070D040US940-FLLONL

CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	441.7	457.3	442.5	67.1	69.7
115°	500.8	515.6	537.4	134.1	71.5
117.5°	552.2	569.6	584.5	459.9	231.7
120°	609.8	622.8	638.5	649.0	531.4
122.5°	658.4	672.4	689.9	695.1	696.0
125°	708.1	719.5	736.0	742.2	744.8
127.5°	753.4	765.6	778.7	787.5	788.3
130°	796.1	810.1	819.6	829.2	828.4
132.5°	839.6	851.0	860.6	868.4	867.6
135°	876.3	890.3	898.0	906.8	905.1
137.5°	914.5	925.0	933.8	942.4	939.9
140°	952.0	959.0	968.6	976.4	972.1
142.5°	983.5	989.5	1000.9	1007.7	1003.4
145°	1016.5	1015.7	1030.4	1036.5	1032.2
147.5°	1045.2	1042.6	1057.4	1061.8	1058.4
150°	1073.1	1067.0	1081.0	1086.2	1081.8
152.5°	1096.6	1089.7	1102.7	1108.0	1101.9
155°	1119.3	1111.5	1121.9	1127.1	1120.2
157.5°	1137.6	1130.6	1138.5	1144.6	1137.6
160°	1153.2	1148.0	1153.2	1158.4	1152.4
162.5°	1167.2	1162.0	1166.4	1172.4	1164.6
165°	1179.4	1174.2	1176.8	1182.9	1176.8
167.5°	1189.0	1183.7	1186.4	1192.5	1184.6
170°	1196.9	1191.6	1193.3	1199.4	1191.6
172.5°	1202.0	1196.9	1198.6	1204.7	1196.9
175°	1206.3	1200.2	1202.0	1208.1	1199.4
177.5°	1208.1	1202.0	1202.9	1209.1	1201.2
180°	1203.8	1203.8	1203.8	1203.8	1203.8

TEST NUMBER: P921471

CATALOG NUMBER: DFN2DIP-4P4F0-070D040US940-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	10.04	11.04	10.87	11.90	12.96	9.60	10.60	10.43	11.45	12.51
	3H	11.72	12.62	12.56	13.48	14.57	11.23	12.13	12.07	12.99	14.08
	4H	12.32	13.17	13.18	14.03	15.13	11.82	12.67	12.68	13.54	14.64
	6H	12.73	13.51	13.60	14.39	15.50	12.23	13.01	13.10	13.89	15.00
	8H	12.84	13.58	13.72	14.48	15.59	12.34	13.08	13.22	13.98	15.09
	12H	12.90	13.60	13.78	14.49	15.63	12.39	13.09	13.27	13.98	15.12
4H	2H	10.52	11.37	11.39	12.24	13.34	10.17	11.02	11.03	11.88	12.98
	3H	12.41	13.11	13.28	14.02	15.13	12.00	12.71	12.87	13.61	14.72
	4H	13.13	13.78	14.02	14.67	15.82	12.71	13.35	13.59	14.25	15.39
	6H	13.66	14.22	14.56	15.14	16.28	13.23	13.78	14.13	14.71	15.85
	8H	13.82	14.34	14.72	15.25	16.41	13.38	13.90	14.28	14.82	15.97
	12H	13.90	14.37	14.82	15.30	16.47	13.45	13.92	14.37	14.85	16.02
8H	4H	13.34	13.86	14.25	14.78	15.93	12.96	13.48	13.87	14.40	15.56
	6H	13.98	14.41	14.92	15.37	16.53	13.60	14.03	14.53	14.99	16.15
	8H	14.21	14.59	15.15	15.54	16.71	13.82	14.20	14.76	15.15	16.32
	12H	14.35	14.69	15.30	15.63	16.85	13.94	14.28	14.89	15.22	16.44
12H	4H	13.33	13.80	14.26	14.74	15.90	12.96	13.43	13.89	14.37	15.53
	6H	14.01	14.40	14.96	15.35	16.52	13.64	14.03	14.59	14.98	16.15
	8H	14.27	14.60	15.21	15.55	16.77	13.89	14.22	14.83	15.17	16.39