

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: P921411

Luminaire Tested: DFN2DIP-4P4F0-040D070US940-FLLONL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P921411
REPORT IS A COMBINATION OF REPORTS P900649 AND P897523
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-4P4F0-040D070US940-FLLONL
Description: 4 foot, 90deg - 4way Define Geo, with Direct Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

Summary

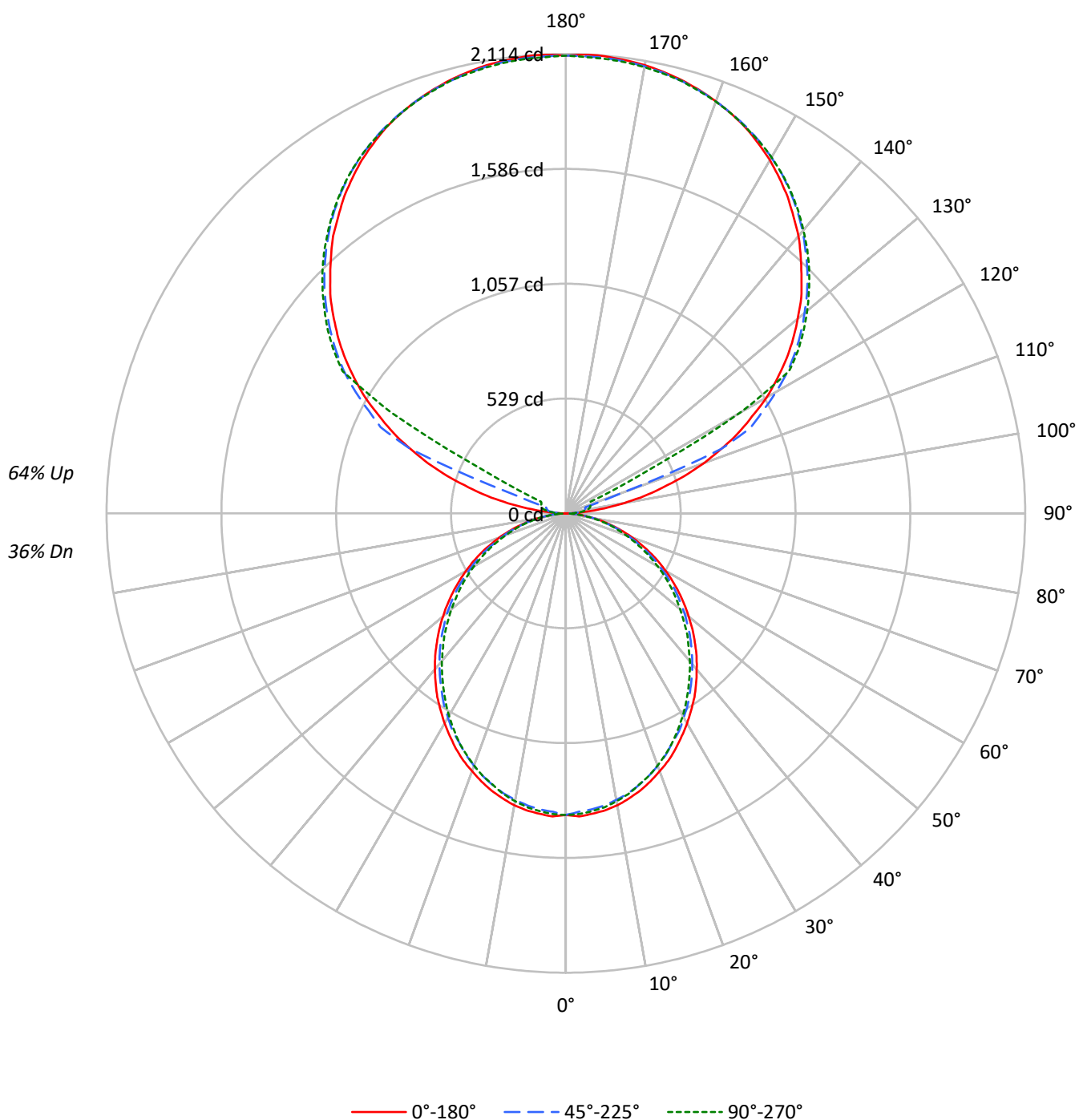
Lumens per Lamp: N/A
Luminaire Lumens: 9710.8 lumens
Efficiency: N/A
Efficacy: 97.2 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 4.07' x L: 4.07' x H: 0.1')
CIE Type: Semi-Indirect

Input Watts (W): 99.9
Input Voltage (V):
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.9968
Total Harmonic Distortion (THDi): 0.064
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 24 FT

TEST NUMBER: P921411

CATALOG NUMBER: DFN2DIP-4P4F0-040D070US940-FLLONL

Luminous Intensity Polar Plot



TEST NUMBER: P921411

CATALOG NUMBER: DFN2DIP-4P4F0-040D070US940-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	50	30	10
RCR																				
0	104	104	104	104	94	94	94	94	76	76	76	59	59	59	44	44	44	36		
1	95	90	87	83	86	82	79	76	66	64	62	52	50	49	39	38	37	31		
2	86	79	73	68	78	72	67	62	58	54	51	46	43	41	34	32	31	26		
3	79	69	62	57	71	63	57	52	51	47	43	40	37	35	30	28	26	22		
4	72	61	54	48	65	56	49	44	45	41	37	36	32	30	27	25	23	19		
5	66	55	47	41	59	50	43	38	41	35	32	32	28	26	24	22	20	16		
6	61	49	41	35	55	45	38	33	37	31	27	29	25	22	22	19	17	14		
7	56	44	36	31	51	40	33	29	33	28	24	26	23	20	20	17	15	13		
8	52	40	32	27	47	37	30	25	30	25	21	24	20	18	18	16	14	11		
9	48	36	29	24	44	33	27	22	28	23	19	22	18	16	17	14	12	10		
10	45	33	26	21	41	31	24	20	25	20	17	20	17	14	16	13	11	9		

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	900	900	900
5°	902	888	894
10°	895	876	882
15°	882	862	864
20°	864	843	845
25°	846	819	823
30°	824	797	795
35°	803	771	765
40°	777	744	736
45°	752	718	708
50°	724	691	674
55°	694	659	643
60°	661	621	608
65°	625	582	566
70°	579	534	522
75°	515	477	481
80°	438	404	403
85°	318	278	271

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 90°

Vertical Angle: 90°

Luminance: 1086 cd/sqm

TEST NUMBER: P921411

CATALOG NUMBER: DFN2DIP-4P4F0-040D070US940-FLLONL

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	130.6	1.3
10°-20°	367.5	3.8
20°-30°	540.1	5.6
30°-40°	627.3	6.5
40°-50°	626.6	6.5
50°-60°	546.3	5.6
60°-70°	403.9	4.2
70°-80°	228.5	2.4
80°-90°	64.0	0.7
90°-100°	69.5	0.7
100°-110°	259.0	2.7
110°-120°	686.8	7.1
120°-130°	1139.1	11.7
130°-140°	1209.9	12.5
140°-150°	1124.5	11.6
150°-160°	904.1	9.3
160°-170°	582.6	6.0
170°-180°	200.5	2.1
0°-30°	1038.3	10.7
0°-40°	1665.6	17.2
0°-60°	2838.5	29.2
0°-90°	3534.9	36.4
90°-120°	1015.2	10.5
90°-150°	4488.7	46.2
90°-180°	6176.0	63.6
0°-180°	9710.8	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	1388	1388	1388	1388	1388	
5°	1388	1383	1368	1378	1376	132
15°	1321	1313	1296	1301	1295	372
25°	1196	1185	1162	1165	1162	550
35°	1032	1018	997	989	982	644
45°	840	830	810	796	790	648
55°	635	627	611	595	589	568
65°	428	420	407	395	388	424
75°	224	222	215	207	210	239
85°	55	53	52	48	47	61
90°	1	18	30	38	41	9
95°	99	49	59	67	66	117
105°	463	509	93	110	116	495
115°	876	902	940	235	125	863
125°	1239	1259	1288	1299	1303	1105
135°	1534	1558	1572	1587	1584	1185
145°	1779	1777	1803	1814	1806	1113
155°	1959	1945	1963	1972	1960	903
165°	2064	2055	2059	2070	2059	583
175°	2111	2100	2104	2114	2099	201
180°	2107	2107	2107	2107	2107	

TEST NUMBER: P921411

CATALOG NUMBER: DFN2DIP-4P4F0-040D070US940-FLLONL

CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	1387.9	1387.9	1387.9	1387.9	1387.9
2.5°	1396.0	1389.3	1374.6	1387.9	1385.4
5°	1387.9	1382.6	1367.9	1378.5	1376.0
7.5°	1378.5	1370.6	1355.8	1366.6	1364.0
10°	1364.0	1354.6	1338.6	1349.2	1345.2
12.5°	1343.8	1335.9	1319.9	1326.6	1323.8
15°	1321.2	1313.2	1295.8	1301.2	1294.6
17.5°	1293.2	1285.2	1267.8	1274.4	1267.8
20°	1262.4	1254.5	1235.8	1239.7	1234.6
22.5°	1231.8	1219.8	1202.4	1202.4	1199.7
25°	1195.7	1185.1	1162.4	1165.0	1162.4
27.5°	1155.7	1146.3	1129.1	1125.1	1118.5
30°	1115.7	1105.0	1085.0	1081.0	1075.7
32.5°	1073.0	1065.1	1043.7	1035.6	1030.2
35°	1031.6	1018.3	996.9	988.9	982.2
37.5°	984.9	972.9	951.5	942.2	935.5
40°	936.9	926.1	904.7	892.9	887.5
42.5°	890.2	879.4	858.2	844.7	836.8
45°	839.5	830.2	810.0	795.5	790.1
47.5°	790.1	780.7	759.4	744.7	736.7
50°	738.0	731.3	712.7	693.9	687.2
52.5°	687.2	678.0	660.7	646.0	636.6
55°	635.3	627.2	611.3	595.2	588.6
57.5°	583.2	576.6	559.1	543.1	537.8
60°	531.1	525.8	507.2	492.5	488.5
62.5°	480.5	471.1	457.8	444.4	439.1
65°	428.5	420.4	407.1	395.0	388.4
67.5°	375.1	368.3	356.4	347.1	341.7
70°	325.7	320.3	308.3	298.9	293.6
72.5°	275.0	269.6	263.0	253.6	249.6
75°	224.2	221.6	214.8	206.9	209.6
77.5°	178.8	173.4	170.8	166.7	162.8
80°	133.5	132.1	129.4	125.5	122.8
82.5°	90.8	90.8	89.5	84.1	84.1
85°	54.7	53.4	52.1	48.0	46.7
87.5°	24.1	21.4	18.7	14.7	13.3
90°	1.4	18.3	30.4	38.2	41.1
92.5°	38.2	32.0	36.6	39.7	41.1
95°	99.0	48.7	59.4	67.1	65.5
97.5°	178.3	53.4	77.7	82.4	83.8
100°	269.9	61.0	86.9	99.0	102.1
102.5°	370.3	367.5	90.0	106.6	111.3
105°	463.4	509.2	93.0	109.7	115.8
107.5°	571.6	609.7	96.1	112.8	119.0
110°	675.4	707.2	266.8	114.4	120.4

TEST NUMBER: P921411

CATALOG NUMBER: DFN2DIP-4P4F0-040D070US940-FLLONL

CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	772.9	800.2	774.4	117.3	122.0
115°	876.5	902.3	940.5	234.8	125.1
117.5°	966.4	996.8	1022.9	804.8	405.5
120°	1067.0	1089.8	1117.4	1135.7	929.9
122.5°	1152.3	1176.7	1207.4	1216.4	1218.0
125°	1239.2	1259.1	1288.1	1298.8	1303.2
127.5°	1318.5	1339.8	1362.8	1378.0	1379.5
130°	1393.2	1417.6	1434.3	1451.2	1449.7
132.5°	1469.4	1489.3	1506.0	1519.7	1518.3
135°	1533.5	1557.9	1571.6	1586.9	1583.9
137.5°	1600.4	1618.8	1634.1	1649.4	1644.8
140°	1666.0	1678.3	1695.0	1708.7	1701.1
142.5°	1721.0	1731.7	1751.4	1763.5	1756.0
145°	1779.0	1777.4	1803.2	1813.9	1806.3
147.5°	1829.1	1824.6	1850.5	1858.1	1852.1
150°	1877.9	1867.3	1891.8	1900.8	1893.2
152.5°	1919.0	1906.9	1929.8	1938.9	1928.3
155°	1958.7	1945.1	1963.4	1972.5	1960.3
157.5°	1990.7	1978.6	1992.3	2003.0	1990.7
160°	2018.3	2009.0	2018.3	2027.3	2016.6
162.5°	2042.6	2033.5	2041.0	2051.7	2038.0
165°	2063.9	2054.9	2059.3	2070.0	2059.3
167.5°	2080.7	2071.4	2076.2	2086.9	2073.1
170°	2094.4	2085.3	2088.3	2099.0	2085.3
172.5°	2103.5	2094.4	2097.6	2108.2	2094.4
175°	2111.1	2100.4	2103.5	2114.2	2099.0
177.5°	2114.2	2103.5	2105.1	2115.9	2102.0
180°	2106.6	2106.6	2106.6	2106.6	2106.6

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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	5.52	6.27	6.59	7.34	8.79	5.07	5.83	6.14	6.89	8.35
	3H	7.18	7.85	8.25	8.93	10.40	6.69	7.36	7.76	8.44	9.91
	4H	7.76	8.40	8.85	9.48	10.96	7.27	7.91	8.36	8.99	10.46
	6H	8.16	8.75	9.26	9.83	11.32	7.66	8.25	8.76	9.33	10.82
	8H	8.27	8.83	9.37	9.92	11.41	7.76	8.32	8.86	9.42	10.90
	12H	8.31	8.84	9.42	9.94	11.44	7.80	8.33	8.91	9.43	10.93
4H	2H	5.97	6.61	7.06	7.69	9.16	5.61	6.25	6.71	7.33	8.81
	3H	7.83	8.36	8.93	9.47	10.96	7.42	7.96	8.52	9.06	10.55
	4H	8.54	9.03	9.65	10.13	11.64	8.12	8.61	9.23	9.71	11.22
	6H	9.06	9.48	10.17	10.60	12.10	8.63	9.05	9.74	10.16	11.67
	8H	9.21	9.60	10.32	10.71	12.23	8.77	9.16	9.88	10.27	11.79
	12H	9.28	9.63	10.41	10.76	12.28	8.83	9.18	9.96	10.31	11.83
8H	4H	8.73	9.13	9.85	10.24	11.76	8.36	8.75	9.47	9.86	11.38
	6H	9.37	9.69	10.50	10.84	12.36	8.98	9.31	10.12	10.46	11.98
	8H	9.59	9.87	10.73	11.01	12.54	9.20	9.48	10.34	10.61	12.15
	12H	9.72	9.97	10.86	11.10	12.67	9.31	9.56	10.45	10.69	12.26
12H	4H	8.71	9.07	9.84	10.19	11.72	8.35	8.70	9.48	9.82	11.35
	6H	9.40	9.68	10.54	10.81	12.35	9.02	9.31	10.16	10.44	11.98
	8H	9.64	9.89	10.78	11.02	12.59	9.26	9.51	10.40	10.64	12.21

END OF REPORT