

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: P921412

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

Issue Date: 11/21/2024

**Test Information**

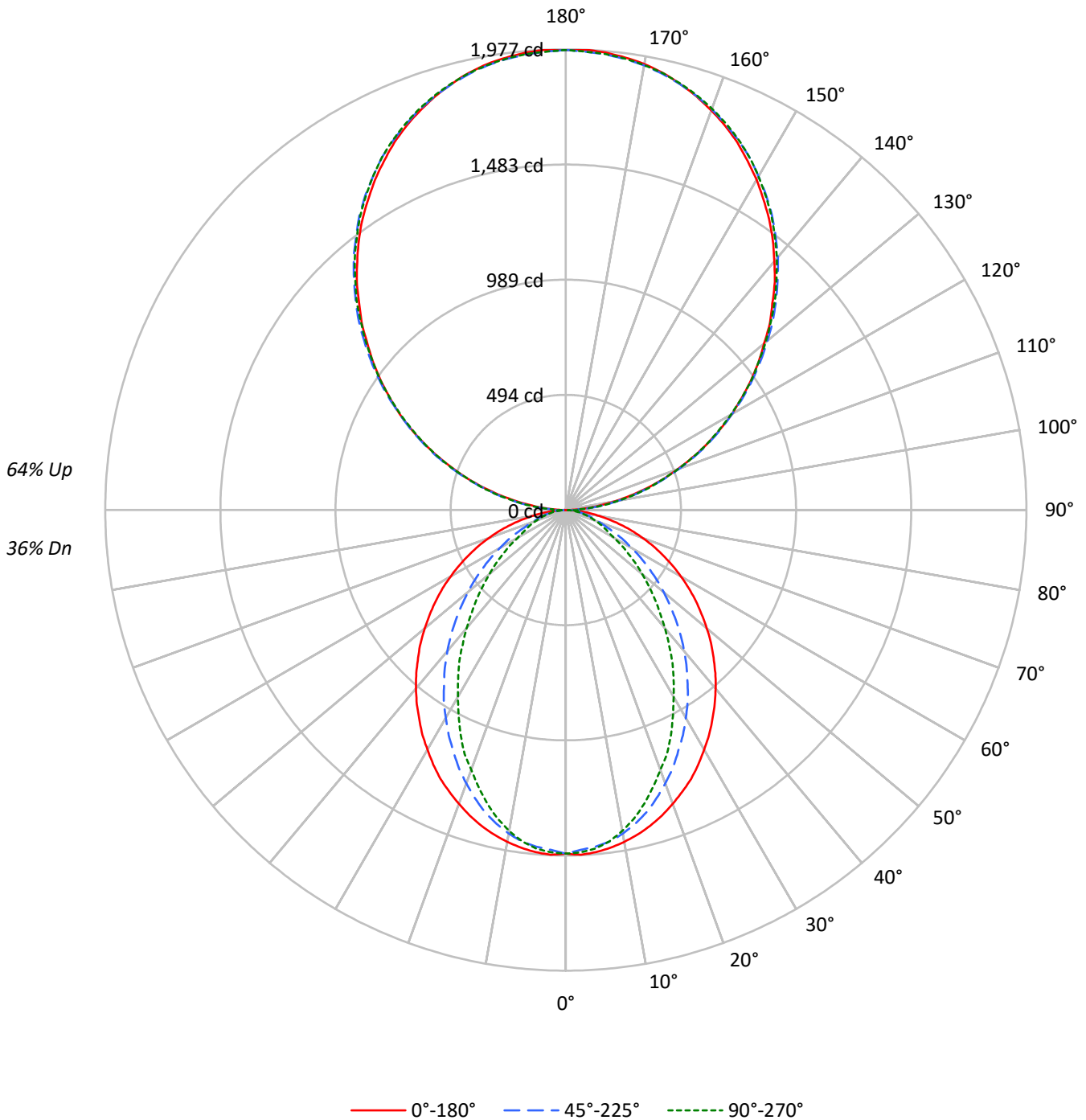
Test Method: LM-79-2019  
Report Number: P921412  
REPORT IS A COMBINATION OF REPORTS P899130 AND P895967  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-4P4F0-040D070US940-RLLFLL  
Description: 4 foot, 90deg - 4way Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 8556.0 lumens  
Efficiency: N/A  
Efficacy: 85.6 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
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

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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	104	104	104	104	94	94	94	94	75	75	75	58	58	58	43	43	43	36				36
1	95	91	87	84	86	82	79	76	66	64	62	52	50	49	38	37	37	31				31
2	87	80	74	69	78	72	67	63	59	55	52	46	44	42	34	33	31	26				26
3	79	70	63	58	71	64	58	53	52	48	44	41	38	36	31	29	27	23				23
4	73	62	55	49	65	57	50	45	46	42	38	37	33	31	27	25	24	20				20
5	67	56	48	42	60	51	44	39	42	37	33	33	29	27	25	23	21	17				17
6	61	50	42	37	55	46	39	34	37	32	29	30	26	24	23	20	18	15				15
7	57	45	37	32	51	41	35	30	34	29	25	27	24	21	21	18	17	14				14
8	53	41	33	28	48	38	31	26	31	26	23	25	21	19	19	17	15	12				12
9	49	37	30	25	44	34	28	24	28	24	20	23	19	17	18	15	14	11				11
10	46	34	27	23	42	31	25	21	26	21	18	21	18	15	16	14	12	10				10

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

	0°	45°	90°
0°	956	956	956
5°	958	941	948
10°	949	923	917
15°	936	893	870
20°	918	851	812
25°	901	804	755
30°	877	756	684
35°	854	705	621
40°	830	651	549
45°	803	591	484
50°	774	531	420
55°	745	467	359
60°	711	400	296
65°	671	332	266
70°	624	268	242
75°	563	237	221
80°	476	199	193
85°	333	135	147

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 90°  
 Vertical Angle: 90°  
 Luminance: 1493 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	138.2	1.6
10°-20°	379.3	4.4
20°-30°	532.5	6.2
30°-40°	580.5	6.8
40°-50°	533.5	6.2
50°-60°	419.0	4.9
60°-70°	272.7	3.2
70°-80°	140.4	1.6
80°-90°	41.4	0.5
90°-100°	122.2	1.4
100°-110°	388.1	4.5
110°-120°	664.2	7.8
120°-130°	873.6	10.2
130°-140°	980.5	11.5
140°-150°	961.5	11.2
150°-160°	806.6	9.4
160°-170°	534.9	6.3
170°-180°	187.0	2.2
0°-30°	1049.9	12.3
0°-40°	1630.4	19.1
0°-60°	2582.9	30.2
0°-90°	3037.4	35.5
90°-120°	1174.5	13.7
90°-150°	3990.1	46.6
90°-180°	5519.0	64.5
0°-180°	8556.0	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	1474	1474	1474	1474	1474	
5°	1474	1468	1450	1462	1458	140
15°	1402	1387	1342	1317	1304	395
25°	1273	1230	1142	1087	1067	585
35°	1097	1029	911	827	798	686
45°	896	807	667	572	540	692
55°	682	578	434	354	328	609
65°	460	352	232	187	183	456
75°	245	152	107	97	96	260
85°	57	29	25	25	25	66
90°	2	21	58	55	56	8
95°	87	104	107	107	104	97
105°	358	363	367	370	370	378
115°	667	676	673	671	667	659
125°	970	984	980	974	972	866
135°	1254	1272	1276	1274	1269	969
145°	1522	1534	1544	1546	1539	951
155°	1741	1746	1751	1759	1754	801
165°	1894	1892	1892	1904	1896	534
175°	1970	1966	1962	1974	1964	187
180°	1974	1974	1974	1974	1974	



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**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°
0°	1474.2	1474.2	1474.2	1474.2	1474.2
2.5°	1480.9	1474.2	1459.5	1472.9	1470.2
5°	1474.2	1467.5	1450.1	1462.1	1458.2
7.5°	1462.1	1454.2	1435.6	1440.7	1434.1
10°	1446.2	1436.8	1410.2	1406.0	1398.2
12.5°	1426.2	1414.2	1378.0	1370.1	1355.4
15°	1402.1	1387.4	1342.1	1316.8	1303.5
17.5°	1374.1	1352.7	1296.6	1267.4	1246.0
20°	1342.1	1315.4	1248.7	1215.4	1186.0
22.5°	1307.4	1276.8	1199.3	1154.0	1134.1
25°	1272.7	1230.0	1141.9	1087.4	1067.2
27.5°	1231.5	1186.0	1088.6	1025.9	995.1
30°	1187.4	1136.6	1029.8	961.9	925.9
32.5°	1144.7	1083.2	973.9	893.9	860.4
35°	1096.7	1028.6	911.2	827.2	797.7
37.5°	1050.0	976.5	852.5	760.4	727.1
40°	1000.6	920.6	791.1	696.4	661.7
42.5°	949.8	864.5	729.8	631.0	597.7
45°	896.5	807.1	667.1	572.3	540.3
47.5°	845.9	751.2	607.1	512.3	483.0
50°	789.8	695.1	548.3	456.2	428.3
52.5°	735.0	635.0	492.3	404.2	378.9
55°	681.7	577.6	433.5	353.6	328.2
57.5°	627.1	520.3	381.6	306.8	285.5
60°	571.0	464.2	326.8	258.9	237.6
62.5°	516.4	409.7	280.1	216.2	205.5
65°	460.3	352.1	232.1	186.8	182.7
67.5°	407.0	298.8	186.8	164.1	160.1
70°	350.9	246.8	154.7	141.4	136.0
72.5°	297.6	198.8	129.4	118.8	116.1
75°	245.4	152.0	106.7	97.4	96.1
77.5°	193.5	108.0	84.1	78.7	76.0
80°	145.3	77.4	63.9	58.8	58.8
82.5°	101.4	52.1	44.1	41.3	41.3
85°	57.3	29.3	25.3	25.3	25.3
87.5°	21.4	10.6	10.6	9.4	9.4
90°	1.8	21.4	58.3	54.8	56.5
92.5°	36.9	50.0	51.8	53.6	53.6
95°	86.9	103.5	106.6	106.6	103.5
97.5°	144.6	160.1	166.7	166.7	166.7
100°	211.2	225.0	229.7	229.7	227.9
102.5°	281.5	291.6	298.2	300.0	298.2
105°	358.3	363.0	366.6	369.6	369.6
107.5°	434.4	441.6	441.6	442.8	434.4
110°	508.3	517.8	517.8	517.8	513.0



TEST NUMBER: P921412

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

**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°
112.5°	588.0	598.2	596.4	591.6	588.0
115°	666.6	676.1	673.2	671.4	666.6
117.5°	744.5	757.6	749.3	744.5	739.8
120°	823.0	836.2	823.0	823.0	817.7
122.5°	894.5	911.1	902.9	898.0	894.5
125°	969.5	984.4	979.6	974.3	972.5
127.5°	1042.7	1061.1	1054.6	1047.5	1042.7
130°	1111.2	1132.6	1129.6	1126.1	1119.5
132.5°	1187.9	1204.6	1205.8	1197.5	1192.7
135°	1254.0	1272.4	1276.0	1274.2	1269.4
137.5°	1327.8	1342.6	1345.6	1344.4	1337.3
140°	1392.7	1407.6	1415.9	1415.9	1409.3
142.5°	1459.3	1474.2	1478.9	1480.7	1474.2
145°	1522.4	1534.3	1543.8	1545.6	1539.1
147.5°	1579.0	1593.8	1601.0	1603.9	1597.4
150°	1637.3	1647.3	1653.9	1659.3	1653.9
152.5°	1689.0	1699.2	1707.4	1714.0	1707.4
155°	1740.8	1745.5	1751.0	1759.3	1753.9
157.5°	1785.5	1789.0	1792.0	1803.9	1795.5
160°	1825.3	1828.9	1830.7	1840.8	1833.6
162.5°	1862.2	1862.2	1864.0	1875.3	1867.0
165°	1893.7	1891.9	1891.9	1903.9	1895.5
167.5°	1922.3	1917.0	1917.0	1928.9	1920.6
170°	1943.8	1939.0	1937.2	1949.1	1939.0
172.5°	1958.6	1953.8	1952.0	1964.0	1953.8
175°	1970.5	1965.8	1962.2	1974.1	1964.0
177.5°	1977.1	1972.3	1968.7	1978.9	1968.7
180°	1974.1	1974.1	1974.1	1974.1	1974.1



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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	5.48	6.21	6.56	7.28	8.75	1.44	2.17	2.52	3.24	4.71
	3H	7.16	7.80	8.24	8.89	10.37	2.62	3.27	3.71	4.35	5.84
	4H	7.76	8.38	8.86	9.46	10.95	3.07	3.68	4.17	4.77	6.26
	6H	8.18	8.75	9.29	9.84	11.34	3.39	3.95	4.49	5.04	6.54
	8H	8.31	8.85	9.42	9.95	11.45	3.48	4.01	4.59	5.12	6.61
	12H	8.37	8.88	9.49	9.98	11.50	3.52	4.03	4.63	5.12	6.64
4H	2H	5.49	6.10	6.59	7.19	8.68	2.03	2.64	3.13	3.73	5.22
	3H	7.31	7.82	8.42	8.94	10.44	3.37	3.88	4.48	4.99	6.50
	4H	8.00	8.47	9.12	9.58	11.10	3.92	4.38	5.03	5.49	7.01
	6H	8.52	8.92	9.64	10.05	11.56	4.33	4.73	5.45	5.86	7.37
	8H	8.70	9.07	9.82	10.19	11.72	4.46	4.83	5.58	5.95	7.48
	12H	8.79	9.13	9.93	10.26	11.79	4.52	4.86	5.66	5.99	7.52
8H	4H	7.97	8.34	9.09	9.46	10.99	4.19	4.57	5.31	5.68	7.21
	6H	8.53	8.84	9.68	10.00	11.53	4.71	5.02	5.85	6.18	7.71
	8H	8.75	9.02	9.90	10.16	11.71	4.90	5.17	6.05	6.31	7.86
	12H	8.89	9.13	10.04	10.26	11.85	5.02	5.25	6.17	6.39	7.97
12H	4H	7.91	8.25	9.05	9.38	10.92	4.19	4.53	5.33	5.66	7.20
	6H	8.51	8.78	9.66	9.92	11.47	4.76	5.03	5.91	6.17	7.72
	8H	8.73	8.97	9.88	10.10	11.69	4.97	5.20	6.12	6.34	7.92