

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: P921500

Luminaire Tested: DFN2DIP-4P4F0-080D050US940-RLLFLL

Issue Date: 11/21/2024

**Test Information**

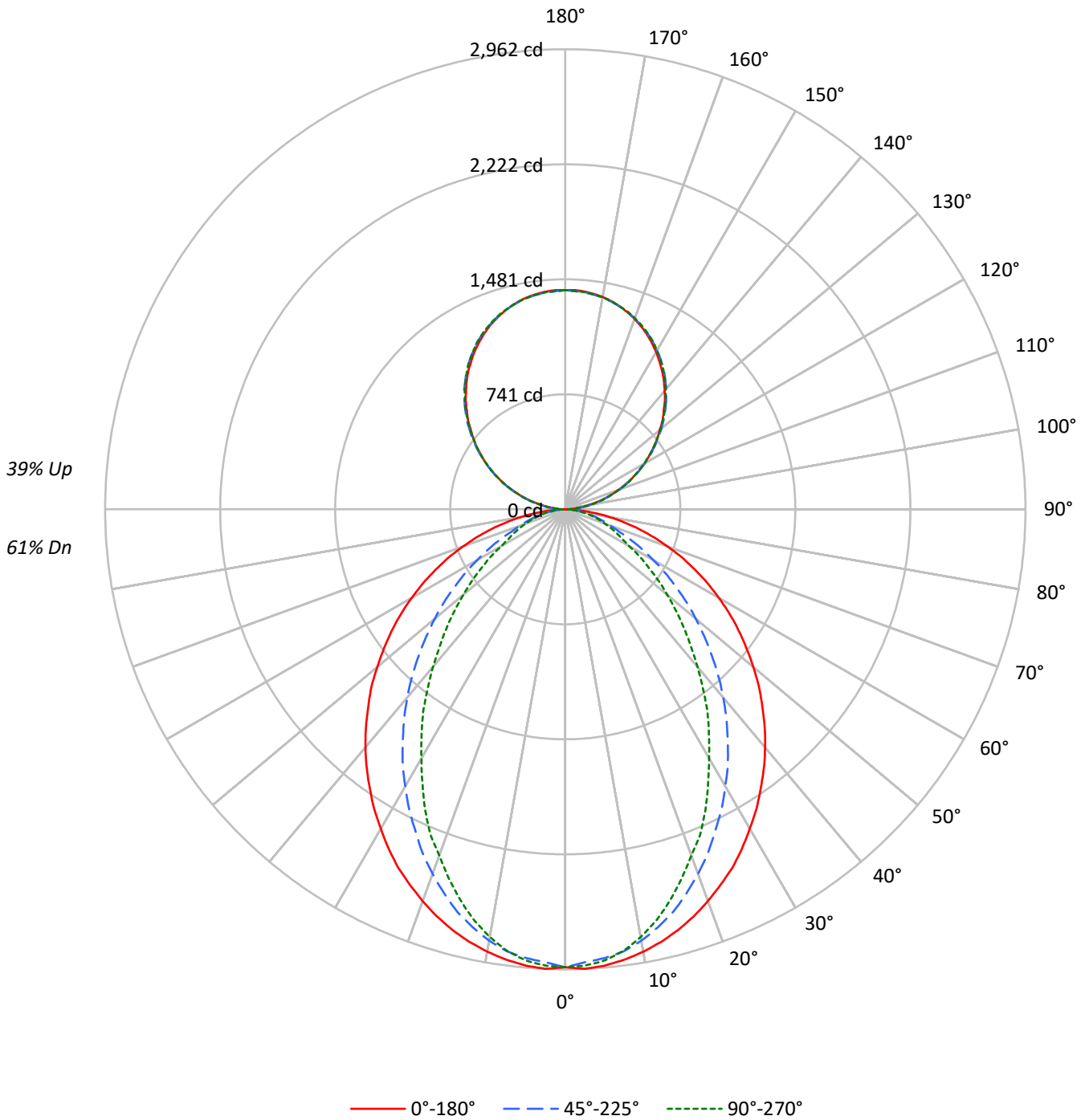
Test Method: LM-79-2019  
Report Number: P921500  
REPORT IS A COMBINATION OF REPORTS P899114 AND P895967  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-4P4F0-080D050US940-RLLFLL  
Description: 4 foot, 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: 10009.5 lumens  
Efficiency: N/A  
Efficacy: 79.4 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-Direct  
  
Input Watts (W): 126  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9971  
Total Harmonic Distortion (THDi): 0.049  
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				
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	110	110	110	110	103	103	103	103	89	89	89	77	77	77	66	66	66	66	66	66	61
1	101	97	93	89	94	91	87	84	79	77	75	69	67	65	59	58	57	59	58	57	52
2	92	85	79	74	86	80	75	70	70	66	63	61	58	56	53	51	49	53	51	49	45
3	85	75	68	62	79	71	64	59	62	57	53	55	51	48	47	45	42	47	45	42	39
4	78	67	59	53	72	63	56	51	56	50	46	49	45	41	43	39	37	43	39	37	34
5	72	60	52	46	67	57	50	44	50	45	40	44	40	36	39	35	32	39	35	32	30
6	66	54	46	41	62	51	44	39	46	40	35	40	36	32	35	32	29	35	32	29	26
7	61	49	41	36	57	47	39	34	42	36	32	37	32	29	32	29	26	32	29	26	24
8	57	45	37	32	53	43	36	31	38	32	28	34	29	26	30	26	23	30	26	23	21
9	53	41	34	29	50	39	32	28	35	29	26	31	27	23	28	24	21	28	24	21	19
10	50	38	31	26	47	36	29	25	32	27	23	29	25	21	26	22	20	26	22	20	18

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

	0°	45°	90°
0°	1913	1913	1913
5°	1916	1883	1895
10°	1897	1847	1834
15°	1871	1786	1739
20°	1837	1703	1623
25°	1801	1609	1511
30°	1754	1513	1368
35°	1708	1409	1242
40°	1661	1302	1098
45°	1606	1183	968
50°	1549	1063	840
55°	1490	934	717
60°	1421	800	591
65°	1342	663	533
70°	1247	536	484
75°	1127	474	442
80°	953	400	385
85°	667	270	294

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 1606 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	276.3	2.8
10°-20°	758.6	7.6
20°-30°	1065.0	10.6
30°-40°	1160.9	11.6
40°-50°	1067.0	10.7
50°-60°	838.0	8.4
60°-70°	545.4	5.4
70°-80°	280.8	2.8
80°-90°	75.7	0.8
90°-100°	87.3	0.9
100°-110°	277.2	2.8
110°-120°	474.5	4.7
120°-130°	624.0	6.2
130°-140°	700.4	7.0
140°-150°	686.8	6.9
150°-160°	576.1	5.8
160°-170°	382.1	3.8
170°-180°	133.5	1.3
0°-30°	2099.9	21.0
0°-40°	3260.8	32.6
0°-60°	5165.8	51.6
0°-90°	6067.6	60.6
90°-120°	838.9	8.4
90°-150°	2850.1	28.5
90°-180°	3942.0	39.4
0°-180°	10009.5	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	2948	2948	2948	2948	2948	
5°	2948	2935	2900	2924	2916	280
15°	2804	2775	2684	2634	2607	790
25°	2546	2460	2284	2175	2134	1171
35°	2193	2057	1822	1654	1595	1373
45°	1793	1614	1334	1144	1081	1385
55°	1363	1155	867	707	656	1218
65°	921	704	464	374	365	913
75°	491	304	214	195	192	519
85°	115	59	51	51	51	132
90°	1	15	42	39	40	10
95°	62	74	76	76	74	69
105°	256	259	262	264	264	270
115°	476	483	481	480	476	471
125°	692	703	700	696	695	619
135°	896	909	911	910	907	692
145°	1087	1096	1103	1104	1099	679
155°	1243	1247	1251	1257	1253	572
165°	1353	1351	1351	1360	1354	382
175°	1408	1404	1402	1410	1403	134
180°	1410	1410	1410	1410	1410	



TEST NUMBER: P921500

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**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°
0°	2948.4	2948.4	2948.4	2948.4	2948.4
2.5°	2961.6	2948.4	2918.9	2945.8	2940.4
5°	2948.4	2935.1	2900.2	2924.3	2916.3
7.5°	2924.3	2908.4	2871.0	2881.6	2868.2
10°	2892.3	2873.6	2820.4	2812.2	2796.3
12.5°	2852.4	2828.3	2756.1	2740.2	2710.8
15°	2804.3	2774.8	2684.2	2633.6	2606.9
17.5°	2748.2	2705.4	2593.4	2534.8	2492.0
20°	2684.2	2630.7	2497.4	2430.9	2371.9
22.5°	2614.9	2553.4	2398.6	2308.0	2268.1
25°	2545.5	2460.1	2283.9	2174.7	2134.5
27.5°	2462.8	2371.9	2177.2	2051.8	1990.4
30°	2374.8	2273.1	2059.8	1923.9	1851.6
32.5°	2289.3	2166.5	1947.9	1787.7	1720.9
35°	2193.3	2057.2	1822.5	1654.4	1595.4
37.5°	2099.9	1953.0	1705.0	1520.7	1454.2
40°	2001.2	1841.2	1582.2	1392.8	1323.4
42.5°	1899.8	1729.1	1459.6	1262.0	1195.4
45°	1793.1	1614.2	1334.2	1144.5	1080.6
47.5°	1691.8	1502.4	1214.2	1024.5	965.9
50°	1579.6	1390.3	1096.7	912.4	856.6
52.5°	1470.1	1269.9	984.5	808.5	757.9
55°	1363.3	1155.3	867.1	707.1	656.5
57.5°	1254.1	1040.6	763.2	613.8	571.0
60°	1141.9	928.5	653.6	517.7	475.0
62.5°	1032.7	819.2	560.3	432.3	411.1
65°	920.6	704.3	464.2	373.7	365.4
67.5°	813.9	597.6	373.7	328.1	320.2
70°	701.8	493.7	309.4	282.8	272.1
72.5°	595.0	397.4	258.8	237.6	232.1
75°	490.9	304.1	213.5	194.7	192.3
77.5°	387.0	216.0	168.2	157.4	152.0
80°	290.7	154.9	128.0	117.4	117.4
82.5°	202.7	104.2	88.0	82.7	82.7
85°	114.7	58.6	50.6	50.6	50.6
87.5°	42.7	21.2	21.2	18.7	18.7
90°	1.2	15.3	41.6	39.1	40.4
92.5°	26.4	35.7	37.0	38.3	38.3
95°	62.1	74.0	76.1	76.1	74.0
97.5°	103.3	114.3	119.0	119.0	119.0
100°	150.9	160.7	164.1	164.1	162.8
102.5°	201.1	208.3	212.9	214.3	212.9
105°	255.9	259.3	261.9	263.9	263.9
107.5°	310.3	315.4	315.4	316.3	310.3
110°	363.0	369.9	369.9	369.9	366.4



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**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°
112.5°	420.0	427.2	426.0	422.6	420.0
115°	476.1	483.0	480.8	479.6	476.1
117.5°	531.8	541.2	535.2	531.8	528.4
120°	587.9	597.3	587.9	587.9	584.1
122.5°	638.9	650.9	644.9	641.5	638.9
125°	692.5	703.1	699.7	695.9	694.6
127.5°	744.8	758.0	753.3	748.1	744.8
130°	793.7	809.0	806.8	804.3	799.6
132.5°	848.6	860.4	861.3	855.3	851.9
135°	895.7	908.8	911.4	910.2	906.8
137.5°	948.4	959.0	961.2	960.3	955.2
140°	994.7	1005.4	1011.3	1011.3	1006.7
142.5°	1042.3	1053.0	1056.4	1057.7	1053.0
145°	1087.4	1095.9	1102.7	1104.0	1099.3
147.5°	1127.8	1138.4	1143.5	1145.7	1140.9
150°	1169.5	1176.7	1181.3	1185.2	1181.3
152.5°	1206.5	1213.7	1219.6	1224.3	1219.6
155°	1243.4	1246.8	1250.6	1256.6	1252.8
157.5°	1275.3	1277.8	1280.0	1288.5	1282.5
160°	1303.8	1306.4	1307.6	1314.8	1309.7
162.5°	1330.2	1330.2	1331.4	1339.5	1333.6
165°	1352.7	1351.4	1351.4	1359.9	1354.0
167.5°	1373.1	1369.2	1369.2	1377.8	1371.8
170°	1388.4	1385.0	1383.8	1392.2	1385.0
172.5°	1399.0	1395.6	1394.4	1402.8	1395.6
175°	1407.6	1404.1	1401.6	1410.1	1402.8
177.5°	1412.2	1408.8	1406.2	1413.5	1406.2
180°	1410.1	1410.1	1410.1	1410.1	1410.1



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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	10.36	11.28	11.22	12.16	13.28	6.32	7.24	7.18	8.13	9.24
	3H	12.05	12.87	12.93	13.77	14.91	7.51	8.34	8.39	9.24	10.38
	4H	12.66	13.44	13.56	14.34	15.49	7.97	8.75	8.87	9.65	10.80
	6H	13.09	13.81	14.00	14.72	15.88	8.30	9.02	9.21	9.92	11.09
	8H	13.23	13.91	14.14	14.83	16.00	8.39	9.08	9.31	10.00	11.16
	12H	13.29	13.94	14.21	14.86	16.05	8.44	9.09	9.36	10.01	11.19
4H	2H	10.39	11.17	11.29	12.07	13.22	6.93	7.71	7.83	8.61	9.76
	3H	12.23	12.88	13.14	13.81	14.97	8.29	8.94	9.20	9.87	11.03
	4H	12.93	13.52	13.85	14.45	15.64	8.84	9.43	9.76	10.36	11.55
	6H	13.46	13.96	14.39	14.91	16.11	9.27	9.78	10.20	10.73	11.92
	8H	13.64	14.11	14.57	15.06	16.26	9.40	9.87	10.34	10.82	12.02
	12H	13.74	14.17	14.70	15.13	16.34	9.47	9.90	10.43	10.86	12.07
8H	4H	12.91	13.38	13.84	14.32	15.53	9.13	9.61	10.07	10.55	11.76
	6H	13.48	13.87	14.45	14.86	16.06	9.66	10.05	10.62	11.03	12.24
	8H	13.70	14.05	14.68	15.02	16.25	9.85	10.20	10.82	11.17	12.39
	12H	13.85	14.15	14.82	15.12	16.39	9.97	10.28	10.95	11.25	12.52
12H	4H	12.86	13.29	13.82	14.25	15.46	9.14	9.57	10.10	10.53	11.74
	6H	13.46	13.80	14.43	14.78	16.00	9.71	10.05	10.68	11.03	12.25
	8H	13.69	13.99	14.66	14.96	16.23	9.92	10.23	10.90	11.20	12.47