

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: P916010

Luminaire Tested: DFN2DIP-4P4F0-070D030US930-FLLFLL

Issue Date: 11/21/2024

**Test Information**

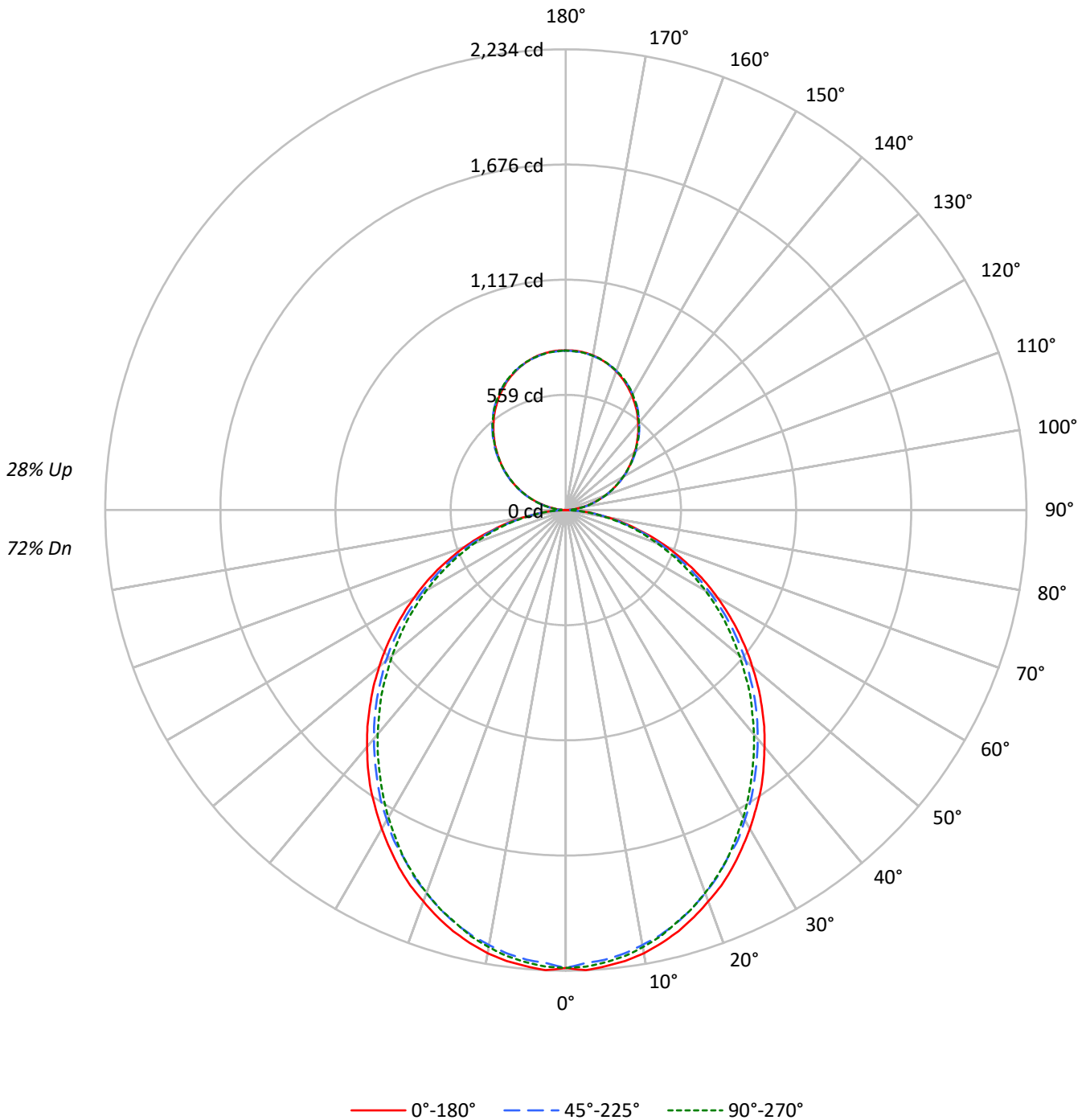
Test Method: LM-79-2019  
Report Number: P916010  
REPORT IS A COMBINATION OF REPORTS P899087 AND P895967  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-4P4F0-070D030US930-FLLFLL  
Description: 4 foot, 90deg - 4way Define Geo, with Direct Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 7814.6 lumens  
Efficiency: N/A  
Efficacy: 80.3 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): 97.3  
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

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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	112	112	112	112	107	107	107	107	96	96	96	86	86	86	77	77	77	77	77	77	72
1	103	98	94	91	97	93	90	87	84	81	79	76	74	72	68	66	65	65	65	65	61
2	94	86	80	74	89	82	76	71	74	69	65	66	63	60	60	57	55	55	55	55	51
3	85	76	68	62	81	72	65	60	65	60	55	59	54	51	53	49	46	46	46	46	43
4	78	67	59	52	74	64	56	51	58	52	47	52	48	44	47	43	40	40	40	40	37
5	72	60	51	45	68	57	49	44	52	46	41	47	42	38	43	38	35	35	35	35	32
6	66	54	45	39	63	51	44	38	47	40	36	43	37	33	39	34	31	31	31	31	28
7	62	49	41	35	58	47	39	34	43	36	32	39	34	30	35	31	27	27	27	27	25
8	57	44	36	31	54	43	35	30	39	33	28	36	30	26	33	28	25	25	25	25	23
9	53	41	33	28	51	39	32	27	36	30	25	33	28	24	30	26	22	22	22	22	20
10	50	37	30	25	47	36	29	24	33	27	23	30	25	22	28	24	20	20	20	20	18

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

	0°	45°	90°
0°	1441	1441	1441
5°	1443	1421	1431
10°	1431	1402	1412
15°	1411	1380	1382
20°	1382	1348	1352
25°	1354	1310	1316
30°	1319	1275	1271
35°	1285	1233	1224
40°	1244	1191	1178
45°	1203	1149	1132
50°	1158	1105	1078
55°	1111	1054	1029
60°	1058	993	973
65°	1000	930	906
70°	926	854	835
75°	823	762	770
80°	700	646	644
85°	509	444	435

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 1203 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	209.0	2.7
10°-20°	588.1	7.5
20°-30°	864.2	11.1
30°-40°	1003.7	12.8
40°-50°	1002.5	12.8
50°-60°	874.2	11.2
60°-70°	646.2	8.3
70°-80°	365.6	4.7
80°-90°	98.7	1.3
90°-100°	47.9	0.6
100°-110°	152.1	1.9
110°-120°	260.3	3.3
120°-130°	342.3	4.4
130°-140°	384.2	4.9
140°-150°	376.8	4.8
150°-160°	316.1	4.0
160°-170°	209.6	2.7
170°-180°	73.3	0.9
0°-30°	1661.3	21.3
0°-40°	2665.1	34.1
0°-60°	4541.7	58.1
0°-90°	5652.2	72.3
90°-120°	460.2	5.9
90°-150°	1563.5	20.0
90°-180°	2162.0	27.7
0°-180°	7814.6	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	2221	2221	2221	2221	2221	
5°	2221	2212	2189	2206	2202	211
15°	2114	2101	2073	2082	2071	595
25°	1913	1896	1860	1864	1860	880
35°	1651	1629	1595	1582	1572	1031
45°	1343	1328	1296	1273	1264	1037
55°	1016	1004	978	952	942	909
65°	686	673	651	632	621	678
75°	359	355	344	331	335	383
85°	88	85	83	77	75	98
90°	1	8	23	21	22	7
95°	34	41	42	42	41	38
105°	140	142	144	145	145	148
115°	261	265	264	263	261	258
125°	380	386	384	382	381	339
135°	491	499	500	499	497	380
145°	597	601	605	606	603	373
155°	682	684	686	689	687	314
165°	742	741	741	746	743	209
175°	772	770	769	774	770	73
180°	774	774	774	774	774	



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**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°
0°	2220.6	2220.6	2220.6	2220.6	2220.6
2.5°	2233.6	2222.9	2199.3	2220.6	2216.6
5°	2220.6	2212.3	2188.7	2205.7	2201.6
7.5°	2205.7	2193.0	2169.4	2186.7	2182.4
10°	2182.4	2167.4	2141.8	2158.8	2152.5
12.5°	2150.2	2137.5	2111.9	2122.5	2118.2
15°	2114.0	2101.3	2073.4	2082.0	2071.3
17.5°	2069.1	2056.4	2028.5	2039.2	2028.5
20°	2019.9	2007.3	1977.3	1983.7	1975.3
22.5°	1971.0	1951.7	1923.9	1923.9	1919.5
25°	1913.3	1896.2	1860.0	1864.1	1860.0
27.5°	1849.1	1834.2	1806.5	1800.2	1789.5
30°	1785.3	1768.0	1736.1	1729.7	1721.1
32.5°	1716.8	1704.1	1669.9	1657.0	1648.4
35°	1650.7	1629.4	1595.1	1582.2	1571.6
37.5°	1575.9	1556.6	1522.4	1507.5	1496.8
40°	1499.1	1481.9	1447.6	1428.6	1420.0
42.5°	1424.3	1407.1	1373.1	1351.6	1338.9
45°	1343.2	1328.3	1296.1	1272.8	1264.1
47.5°	1264.1	1249.2	1215.0	1191.4	1178.8
50°	1180.8	1170.1	1140.2	1110.4	1099.7
52.5°	1099.7	1084.8	1057.1	1033.6	1018.6
55°	1016.5	1003.6	978.0	952.4	941.8
57.5°	933.2	922.5	894.6	869.0	860.5
60°	849.8	841.4	811.5	788.0	781.6
62.5°	768.7	753.7	732.5	711.2	702.5
65°	685.6	672.6	651.3	632.1	621.4
67.5°	600.1	589.3	570.2	555.3	546.7
70°	521.1	512.5	493.2	478.3	469.9
72.5°	439.9	431.4	420.7	405.8	399.4
75°	358.6	354.6	343.6	331.0	335.3
77.5°	286.2	277.5	273.2	266.8	260.6
80°	213.6	211.4	207.1	200.7	196.4
82.5°	145.2	145.2	143.2	134.6	134.6
85°	87.5	85.4	83.4	76.8	74.8
87.5°	38.5	34.2	29.9	23.6	21.3
90°	0.7	8.4	22.8	21.4	22.2
92.5°	14.4	19.6	20.3	21.0	21.0
95°	34.1	40.6	41.7	41.7	40.6
97.5°	56.7	62.7	65.3	65.3	65.3
100°	82.8	88.1	90.0	90.0	89.4
102.5°	110.3	114.3	116.8	117.6	116.8
105°	140.4	142.3	143.7	144.8	144.8
107.5°	170.2	173.0	173.0	173.5	170.2
110°	199.2	202.9	202.9	202.9	201.1



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**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°
112.5°	230.4	234.4	233.7	231.8	230.4
115°	261.2	264.9	263.7	263.1	261.2
117.5°	291.7	296.9	293.6	291.7	289.8
120°	322.5	327.7	322.5	322.5	320.4
122.5°	350.5	357.0	353.8	351.9	350.5
125°	379.9	385.7	383.8	381.7	381.1
127.5°	408.5	415.8	413.3	410.4	408.5
130°	435.4	443.8	442.6	441.2	438.6
132.5°	465.5	472.0	472.5	469.2	467.3
135°	491.4	498.6	500.0	499.3	497.4
137.5°	520.2	526.1	527.3	526.8	524.0
140°	545.7	551.5	554.8	554.8	552.2
142.5°	571.9	577.6	579.5	580.2	577.6
145°	596.6	601.2	605.0	605.6	603.1
147.5°	618.7	624.5	627.3	628.5	625.9
150°	641.6	645.6	648.1	650.2	648.1
152.5°	661.9	665.8	669.0	671.6	669.0
155°	682.2	684.0	686.1	689.3	687.3
157.5°	699.6	701.0	702.2	706.9	703.6
160°	715.3	716.6	717.4	721.3	718.5
162.5°	729.7	729.7	730.4	734.8	731.6
165°	742.1	741.4	741.4	746.0	742.7
167.5°	753.3	751.1	751.1	755.8	752.5
170°	761.7	759.8	759.1	763.8	759.8
172.5°	767.4	765.6	764.9	769.6	765.6
175°	772.2	770.3	768.9	773.6	769.6
177.5°	774.7	772.8	771.4	775.4	771.4
180°	773.6	773.6	773.6	773.6	773.6



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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	10.40	11.51	11.14	12.27	13.18	9.96	11.07	10.70	11.83	12.74
	3H	12.09	13.08	12.84	13.85	14.80	11.60	12.59	12.35	13.36	14.30
	4H	12.69	13.63	13.46	14.41	15.36	12.20	13.13	12.97	13.91	14.87
	6H	13.11	13.97	13.89	14.76	15.73	12.61	13.47	13.39	14.26	15.23
	8H	13.22	14.05	14.01	14.85	15.82	12.72	13.55	13.51	14.35	15.32
	12H	13.28	14.07	14.08	14.87	15.87	12.77	13.56	13.57	14.36	15.36
4H	2H	10.90	11.83	11.67	12.61	13.57	10.54	11.48	11.31	12.26	13.21
	3H	12.79	13.57	13.58	14.39	15.36	12.38	13.17	13.17	13.98	14.95
	4H	13.52	14.23	14.32	15.04	16.04	13.09	13.81	13.90	14.62	15.62
	6H	14.05	14.67	14.87	15.51	16.51	13.62	14.24	14.44	15.08	16.08
	8H	14.21	14.79	15.03	15.62	16.64	13.77	14.35	14.60	15.18	16.20
	12H	14.30	14.82	15.14	15.67	16.70	13.85	14.37	14.69	15.22	16.25
8H	4H	13.74	14.31	14.56	15.15	16.16	13.36	13.94	14.18	14.77	15.79
	6H	14.38	14.86	15.23	15.74	16.76	14.00	14.48	14.85	15.35	16.37
	8H	14.61	15.04	15.47	15.91	16.94	14.22	14.64	15.08	15.51	16.55
	12H	14.76	15.13	15.62	15.99	17.08	14.35	14.72	15.21	15.58	16.67
12H	4H	13.73	14.25	14.57	15.11	16.13	13.37	13.88	14.21	14.74	15.76
	6H	14.42	14.84	15.28	15.71	16.75	14.04	14.47	14.91	15.34	16.38
	8H	14.67	15.05	15.54	15.91	17.00	14.29	14.67	15.16	15.53	16.62