

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: P918444

Luminaire Tested: DFN2DIP-TR4F0-110D060US930-RLLFLL

Issue Date: 11/21/2024

**Test Information**

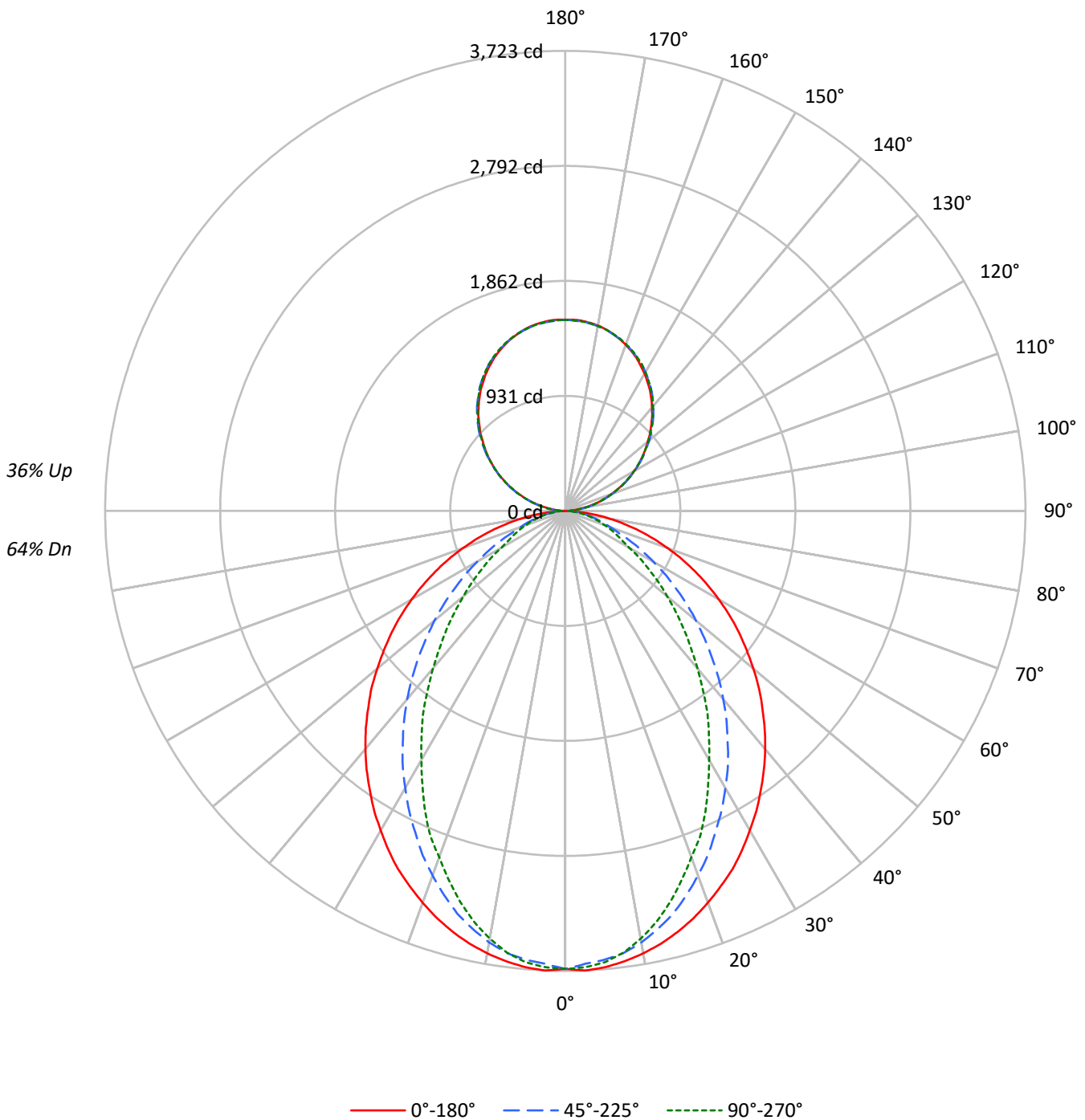
Test Method: LM-79-2019  
Report Number: P918444  
REPORT IS A COMBINATION OF REPORTS P900420 AND P897293  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-TR4F0-110D060US930-RLLFLL  
Description: 4 foot, Triangle Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 11952.3 lumens  
Efficiency: N/A  
Efficacy: 75.9 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 3.43' x L: 3.96' x H: 0.1')  
CIE Type: Semi-Direct  
  
Input Watts (W): 157.4  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9613  
Total Harmonic Distortion (THDi): 0.083  
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	104	104	104	104	91	91	91	79	79	79	69	69	69	69	69	69	64
1	101	97	94	90	95	92	88	85	81	78	76	71	69	67	62	61	59	62	61	59	55
2	93	86	80	75	87	81	76	71	72	68	64	63	60	57	55	53	51	55	53	51	47
3	85	76	69	63	80	72	65	60	64	59	55	56	52	49	49	47	44	49	47	44	41
4	78	68	60	54	73	64	57	52	57	52	47	51	46	43	45	41	39	45	41	39	35
5	72	61	53	47	68	58	50	45	51	46	41	46	41	38	40	37	34	40	37	34	31
6	67	55	47	41	63	52	45	39	47	41	36	42	37	33	37	33	30	37	33	30	28
7	62	50	42	36	58	47	40	35	43	37	32	38	33	30	34	30	27	34	30	27	25
8	58	45	38	32	54	43	36	31	39	33	29	35	30	27	31	27	25	31	27	25	22
9	54	42	34	29	51	40	33	28	36	30	26	32	28	24	29	25	22	29	25	22	20
10	50	38	31	26	48	37	30	26	33	28	24	30	25	22	27	23	20	27	23	20	19

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

	0°	45°	90°
0°	2945	2945	2945
5°	2949	2898	2916
10°	2920	2841	2821
15°	2880	2747	2675
20°	2827	2618	2495
25°	2772	2472	2321
30°	2699	2324	2100
35°	2628	2164	1906
40°	2555	1998	1684
45°	2470	1815	1483
50°	2382	1629	1286
55°	2291	1431	1097
60°	2185	1224	903
65°	2064	1014	813
70°	1916	817	735
75°	1731	720	669
80°	1462	604	580
85°	1019	403	435

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 2470 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	347.4	2.9
10°-20°	953.6	8.0
20°-30°	1338.9	11.2
30°-40°	1459.5	12.2
40°-50°	1341.4	11.2
50°-60°	1053.5	8.8
60°-70°	685.7	5.7
70°-80°	353.0	3.0
80°-90°	94.5	0.8
90°-100°	95.7	0.8
100°-110°	304.2	2.5
110°-120°	520.6	4.4
120°-130°	684.6	5.7
130°-140°	768.4	6.4
140°-150°	753.5	6.3
150°-160°	632.1	5.3
160°-170°	419.2	3.5
170°-180°	146.5	1.2
0°-30°	2639.9	22.1
0°-40°	4099.4	34.3
0°-60°	6494.2	54.3
0°-90°	7627.4	63.8
90°-120°	920.5	7.7
90°-150°	3127.0	26.2
90°-180°	4325.0	36.2
0°-180°	11952.3	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	3707	3707	3707	3707	3707	
5°	3707	3690	3646	3676	3666	351
15°	3525	3488	3374	3311	3277	993
25°	3200	3093	2871	2734	2683	1472
35°	2757	2586	2291	2080	2006	1726
45°	2254	2029	1677	1439	1358	1741
55°	1714	1452	1090	889	825	1532
65°	1157	885	584	470	459	1147
75°	617	382	268	245	242	653
85°	144	74	64	64	64	165
90°	1	17	46	43	44	12
95°	68	81	84	84	81	76
105°	281	284	287	290	290	296
115°	522	530	528	526	522	517
125°	760	771	768	764	762	679
135°	983	997	1000	999	995	760
145°	1193	1202	1210	1211	1206	745
155°	1364	1368	1372	1379	1374	628
165°	1484	1483	1483	1492	1486	419
175°	1544	1541	1538	1547	1539	147
180°	1547	1547	1547	1547	1547	



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**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°
0°	3706.6	3706.6	3706.6	3706.6	3706.6
2.5°	3723.3	3706.6	3669.6	3703.4	3696.6
5°	3706.6	3689.9	3646.1	3676.3	3666.4
7.5°	3676.3	3656.4	3609.4	3622.6	3605.8
10°	3636.1	3612.6	3545.7	3535.4	3515.5
12.5°	3585.9	3555.7	3464.9	3445.0	3407.9
15°	3525.4	3488.4	3374.5	3310.8	3277.3
17.5°	3455.0	3401.3	3260.3	3186.6	3132.9
20°	3374.5	3307.3	3139.6	3056.0	2982.0
22.5°	3287.4	3210.1	3015.5	2901.6	2851.3
25°	3200.1	3092.7	2871.3	2733.9	2683.4
27.5°	3096.3	2982.0	2737.1	2579.4	2502.2
30°	2985.5	2857.8	2589.5	2418.6	2327.8
32.5°	2878.1	2723.6	2448.8	2247.5	2163.5
35°	2757.4	2586.2	2291.2	2079.8	2005.8
37.5°	2640.0	2455.3	2143.5	1911.8	1828.2
40°	2515.8	2314.7	1989.1	1750.9	1663.8
42.5°	2388.3	2173.7	1835.0	1586.6	1502.9
45°	2254.2	2029.3	1677.3	1438.8	1358.4
47.5°	2126.8	1888.7	1526.4	1287.9	1214.3
50°	1985.8	1747.8	1378.8	1147.0	1076.9
52.5°	1848.1	1596.5	1237.8	1016.4	952.7
55°	1713.9	1452.4	1090.1	889.0	825.3
57.5°	1576.6	1308.2	959.4	771.6	717.8
60°	1435.7	1167.3	821.7	650.9	597.2
62.5°	1298.3	1030.0	704.3	543.5	516.7
65°	1157.3	885.4	583.7	469.8	459.4
67.5°	1023.2	751.3	469.8	412.5	402.5
70°	882.2	620.7	389.0	355.6	342.0
72.5°	748.0	499.7	325.3	298.6	291.8
75°	617.1	382.2	268.3	244.8	241.7
77.5°	486.5	271.6	211.4	197.9	191.1
80°	365.5	194.7	160.9	147.7	147.7
82.5°	254.8	130.9	110.7	104.0	104.0
85°	144.1	73.7	63.7	63.7	63.7
87.5°	53.7	26.7	26.7	23.5	23.5
90°	1.4	16.8	45.7	42.9	44.3
92.5°	28.9	39.2	40.6	42.0	42.0
95°	68.1	81.1	83.5	83.5	81.1
97.5°	113.3	125.5	130.6	130.6	130.6
100°	165.6	176.3	180.0	180.0	178.6
102.5°	220.6	228.5	233.7	235.1	233.7
105°	280.8	284.5	287.3	289.7	289.7
107.5°	340.5	346.1	346.1	347.0	340.5
110°	398.4	405.8	405.8	405.8	402.0



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**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°
112.5°	460.8	468.7	467.3	463.6	460.8
115°	522.4	529.9	527.5	526.1	522.4
117.5°	583.5	593.8	587.2	583.5	579.8
120°	645.1	655.3	645.1	645.1	640.8
122.5°	701.0	714.0	707.5	703.8	701.0
125°	759.8	771.4	767.7	763.5	762.1
127.5°	817.2	831.6	826.5	820.9	817.2
130°	870.8	887.6	885.3	882.5	877.3
132.5°	931.0	944.0	944.9	938.4	934.7
135°	982.8	997.2	1000.0	998.6	994.8
137.5°	1040.6	1052.2	1054.6	1053.6	1048.1
140°	1091.4	1103.1	1109.6	1109.6	1104.5
142.5°	1143.6	1155.3	1159.0	1160.4	1155.3
145°	1193.1	1202.4	1209.9	1211.3	1206.2
147.5°	1237.4	1249.0	1254.7	1256.9	1251.8
150°	1283.1	1291.0	1296.2	1300.3	1296.2
152.5°	1323.6	1331.6	1338.1	1343.3	1338.1
155°	1364.2	1368.0	1372.1	1378.8	1374.5
157.5°	1399.2	1402.1	1404.4	1413.7	1407.2
160°	1430.5	1433.3	1434.7	1442.6	1437.0
162.5°	1459.4	1459.4	1460.8	1469.7	1463.1
165°	1484.1	1482.7	1482.7	1492.1	1485.6
167.5°	1506.5	1502.4	1502.4	1511.6	1505.1
170°	1523.3	1519.6	1518.2	1527.5	1519.6
172.5°	1535.0	1531.2	1529.8	1539.1	1531.2
175°	1544.3	1540.6	1537.7	1547.1	1539.1
177.5°	1549.4	1545.7	1542.9	1550.8	1542.9
180°	1547.1	1547.1	1547.1	1547.1	1547.1



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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	12.09	13.05	12.93	13.90	14.97	8.07	9.03	8.90	9.88	10.94
	3H	13.78	14.64	14.63	15.50	16.59	9.27	10.12	10.12	10.99	12.08
	4H	14.40	15.20	15.26	16.07	17.17	9.72	10.53	10.59	11.40	12.50
	6H	14.82	15.57	15.70	16.44	17.56	10.05	10.80	10.93	11.67	12.79
	8H	14.95	15.66	15.84	16.55	17.67	10.15	10.85	11.03	11.75	12.86
	12H	15.02	15.69	15.91	16.58	17.72	10.20	10.87	11.09	11.76	12.89
4H	2H	12.13	12.94	13.00	13.81	14.91	8.68	9.49	9.55	10.36	11.46
	3H	13.97	14.64	14.85	15.54	16.66	10.04	10.71	10.92	11.61	12.73
	4H	14.67	15.28	15.56	16.17	17.32	10.59	11.21	11.49	12.10	13.25
	6H	15.19	15.71	16.10	16.64	17.78	11.02	11.55	11.93	12.47	13.61
	8H	15.36	15.86	16.28	16.77	17.93	11.15	11.65	12.06	12.56	13.72
	12H	15.47	15.91	16.39	16.84	18.00	11.23	11.67	12.15	12.60	13.77
8H	4H	14.64	15.13	15.55	16.05	17.21	10.88	11.38	11.79	12.29	13.45
	6H	15.21	15.62	16.15	16.58	17.73	11.41	11.81	12.34	12.77	13.93
	8H	15.43	15.79	16.38	16.74	17.91	11.60	11.96	12.55	12.91	14.08
	12H	15.57	15.89	16.52	16.83	18.06	11.73	12.04	12.67	12.98	14.21
12H	4H	14.60	15.04	15.53	15.98	17.14	10.89	11.34	11.82	12.27	13.43
	6H	15.19	15.55	16.14	16.50	17.67	11.46	11.82	12.40	12.77	13.94
	8H	15.42	15.73	16.36	16.67	17.90	11.68	11.99	12.62	12.93	14.16