

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: P910303

Luminaire Tested: DFN2DIP-TR4F0-120D080US840-FLLONL

Issue Date: 11/21/2024

**Test Information**

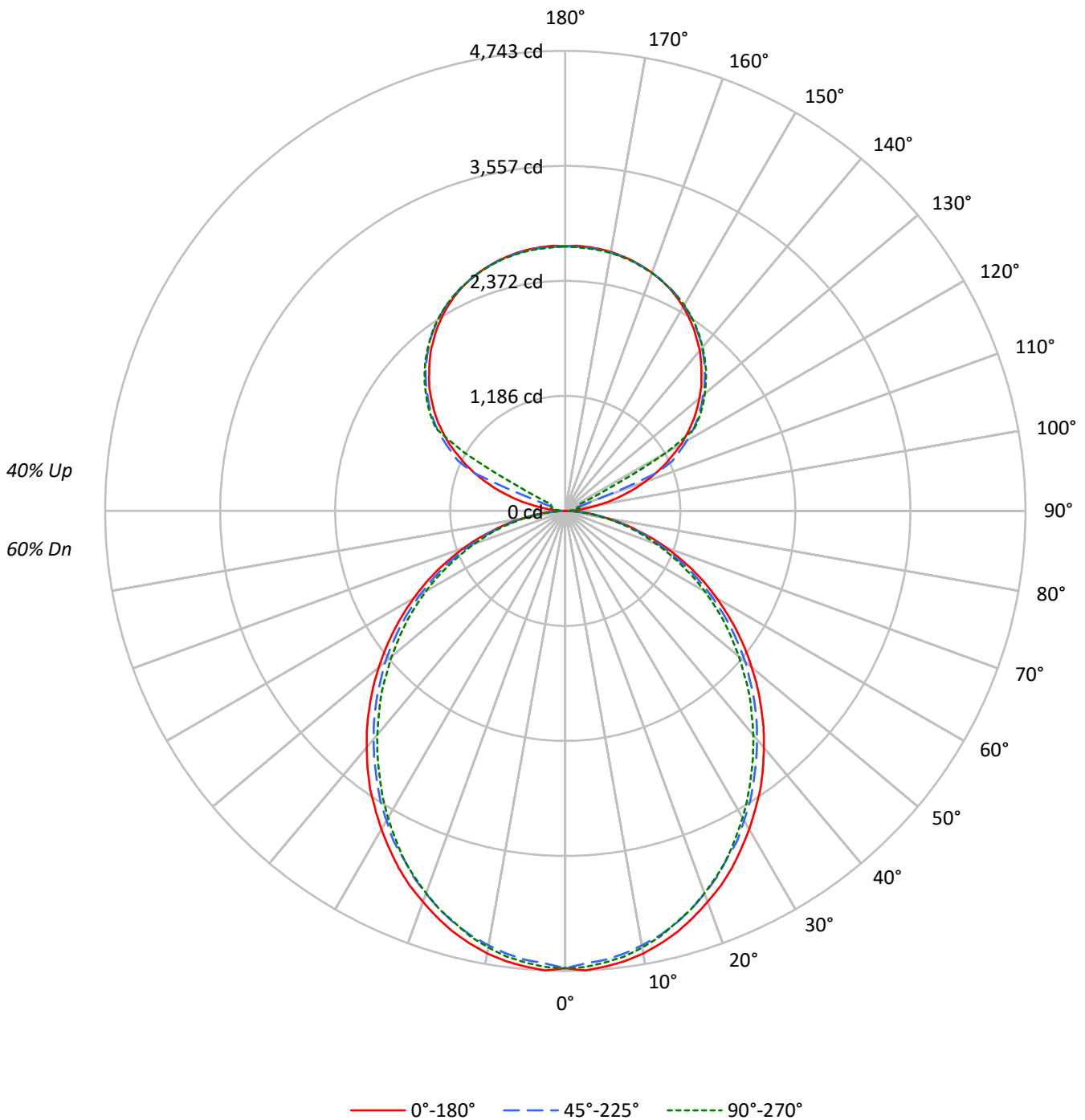
Test Method: LM-79-2019  
Report Number: P910303  
REPORT IS A COMBINATION OF REPORTS P901977 AND P898849  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-TR4F0-120D080US840-FLLONL  
Description: 4 foot, Triangle Define Geo, with Direct Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 19995.3 lumens  
Efficiency: N/A  
Efficacy: 108.2 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
Luminous Opening: Rectangular w/ Sides (W: 3.43' x L: 3.96' x H: 0.1')  
CIE Type: Semi-Direct  
  
Input Watts (W): 184.8  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9821  
Total Harmonic Distortion (THDi): 0.08  
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		0
RCR																			
0	110	110	110	110	102	102	102	102	89	89	89	77	77	77	65	65	65		60
1	100	96	92	88	93	90	86	83	78	75	73	67	66	64	58	56	55		51
2	91	84	77	72	85	78	73	68	68	64	61	59	56	53	51	49	47		42
3	83	73	66	60	77	69	62	57	60	55	51	52	48	45	45	42	40		36
4	76	65	57	51	71	61	54	48	54	48	44	47	42	39	40	37	34		31
5	70	58	50	44	65	55	47	42	48	42	38	42	37	34	36	33	30		27
6	64	52	44	38	60	49	42	36	43	37	33	38	33	30	33	29	26		24
7	60	47	39	33	56	44	37	32	39	33	29	35	30	26	30	26	23		21
8	55	43	35	30	52	40	33	28	36	30	26	32	27	23	28	24	21		19
9	52	39	32	26	48	37	30	25	33	27	23	29	24	21	26	22	19		17
10	48	36	29	24	45	34	27	23	30	25	21	27	22	19	24	20	17		15

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

	0°	45°	90°
0°	3746	3746	3746
5°	3752	3694	3719
10°	3722	3644	3668
15°	3667	3584	3589
20°	3593	3501	3509
25°	3520	3401	3415
30°	3427	3308	3297
35°	3340	3199	3172
40°	3233	3088	3052
45°	3125	2977	2930
50°	3008	2861	2789
55°	2885	2726	2659
60°	2747	2567	2510
65°	2596	2401	2334
70°	2403	2200	2145
75°	2136	1958	1971
80°	1815	1651	1637
85°	1313	1120	1085

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 3125 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	443.8	2.2
10°-20°	1248.7	6.2
20°-30°	1835.1	9.2
30°-40°	2131.4	10.7
40°-50°	2128.7	10.6
50°-60°	1856.2	9.3
60°-70°	1372.1	6.9
70°-80°	776.3	3.9
80°-90°	209.7	1.0
90°-100°	89.9	0.4
100°-110°	335.1	1.7
110°-120°	888.9	4.4
120°-130°	1474.3	7.4
130°-140°	1566.0	7.8
140°-150°	1455.4	7.3
150°-160°	1170.1	5.9
160°-170°	754.0	3.8
170°-180°	259.5	1.3
0°-30°	3527.6	17.6
0°-40°	5659.0	28.3
0°-60°	9643.8	48.2
0°-90°	12002.0	60.0
90°-120°	1314.0	6.6
90°-150°	5809.7	29.1
90°-180°	7993.0	40.0
0°-180°	19995.3	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	4715	4715	4715	4715	4715	
5°	4715	4698	4648	4684	4675	448
15°	4489	4462	4403	4421	4398	1264
25°	4062	4026	3950	3958	3950	1869
35°	3505	3460	3387	3360	3337	2189
45°	2852	2820	2752	2703	2684	2201
55°	2158	2131	2077	2022	2000	1930
65°	1456	1428	1383	1342	1320	1439
75°	762	753	730	703	712	813
85°	186	181	177	163	159	207
90°	2	24	39	49	53	18
95°	128	63	77	87	85	152
105°	600	659	120	142	150	641
115°	1134	1168	1217	304	162	1117
125°	1604	1630	1667	1681	1687	1430
135°	1985	2016	2034	2054	2050	1533
145°	2302	2300	2334	2348	2338	1440
155°	2535	2518	2541	2553	2537	1168
165°	2671	2660	2665	2679	2665	755
175°	2732	2719	2723	2736	2717	260
180°	2726	2726	2726	2726	2726	



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**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°
0°	4715.4	4715.4	4715.4	4715.4	4715.4
2.5°	4742.7	4720.1	4670.1	4715.4	4706.7
5°	4715.4	4697.5	4647.5	4683.6	4674.9
7.5°	4683.6	4656.6	4606.6	4643.2	4634.1
10°	4634.1	4602.3	4547.9	4584.0	4570.6
12.5°	4565.7	4538.7	4484.4	4507.0	4497.8
15°	4488.8	4461.8	4402.6	4420.9	4398.3
17.5°	4393.5	4366.6	4307.4	4330.0	4307.4
20°	4289.1	4262.1	4198.7	4212.1	4194.4
22.5°	4185.2	4144.3	4085.1	4085.1	4076.0
25°	4062.5	4026.4	3949.5	3958.2	3949.5
27.5°	3926.4	3894.6	3836.0	3822.4	3799.9
30°	3790.7	3754.2	3686.3	3672.9	3654.6
32.5°	3645.4	3618.6	3545.8	3518.5	3500.2
35°	3504.9	3459.8	3387.1	3359.7	3337.1
37.5°	3346.2	3305.4	3232.7	3201.0	3178.3
40°	3183.2	3146.6	3073.9	3033.5	3015.3
42.5°	3024.4	2987.9	2915.7	2870.0	2843.1
45°	2852.2	2820.5	2752.1	2702.6	2684.3
47.5°	2684.3	2652.5	2579.9	2529.9	2503.0
50°	2507.3	2484.7	2421.2	2357.6	2335.0
52.5°	2335.0	2303.3	2244.6	2194.5	2162.8
55°	2158.5	2131.1	2076.7	2022.4	1999.7
57.5°	1981.5	1958.8	1899.7	1845.3	1827.0
60°	1804.4	1786.7	1723.1	1673.1	1659.6
62.5°	1632.2	1600.4	1555.3	1510.1	1491.8
65°	1455.7	1428.3	1383.0	1342.1	1319.6
67.5°	1274.3	1251.2	1210.8	1179.1	1160.8
70°	1106.4	1088.1	1047.2	1015.5	997.7
72.5°	934.2	915.9	893.3	861.6	848.1
75°	761.5	752.9	729.7	702.9	712.0
77.5°	607.5	589.3	580.2	566.6	553.2
80°	453.6	448.8	439.7	426.3	417.1
82.5°	308.3	308.3	304.1	285.8	285.8
85°	185.7	181.4	177.0	163.1	158.8
87.5°	81.8	72.6	63.5	50.0	45.2
90°	1.9	23.6	39.4	49.4	53.2
92.5°	49.4	41.5	47.4	51.3	53.2
95°	128.2	63.0	76.9	86.9	84.8
97.5°	230.8	69.1	100.5	106.6	108.5
100°	349.3	79.0	112.5	128.2	132.1
102.5°	479.4	475.5	116.4	137.9	144.1
105°	599.8	659.0	120.4	142.0	150.0
107.5°	739.8	789.0	124.4	145.9	153.9
110°	874.1	915.3	345.4	148.0	155.8



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**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°
112.5°	1000.4	1035.7	1002.3	151.8	157.9
115°	1134.4	1167.9	1217.3	303.9	161.9
117.5°	1250.8	1290.2	1323.9	1041.6	524.8
120°	1381.1	1410.6	1446.2	1469.9	1203.5
122.5°	1491.4	1523.1	1562.7	1574.4	1576.5
125°	1603.9	1629.6	1667.1	1680.9	1686.8
127.5°	1706.5	1734.1	1763.9	1783.5	1785.4
130°	1803.2	1834.8	1856.4	1878.2	1876.3
132.5°	1901.9	1927.6	1949.2	1967.0	1965.1
135°	1984.8	2016.4	2034.0	2054.0	2049.9
137.5°	2071.5	2095.2	2115.1	2134.8	2128.9
140°	2156.3	2172.2	2193.8	2211.6	2201.7
142.5°	2227.6	2241.3	2266.8	2282.6	2272.7
145°	2302.5	2300.4	2333.9	2347.7	2337.8
147.5°	2367.4	2361.6	2395.0	2404.9	2397.1
150°	2430.6	2416.8	2448.4	2460.1	2450.3
152.5°	2483.9	2468.1	2497.6	2509.6	2495.8
155°	2535.2	2517.6	2541.2	2552.9	2537.3
157.5°	2576.6	2560.9	2578.7	2592.5	2576.6
160°	2612.2	2600.3	2612.2	2623.9	2610.1
162.5°	2643.6	2631.9	2641.7	2655.5	2637.8
165°	2671.3	2659.6	2665.4	2679.2	2665.4
167.5°	2693.0	2681.1	2687.2	2701.0	2683.2
170°	2710.9	2698.9	2702.9	2716.7	2698.9
172.5°	2722.6	2710.9	2714.8	2728.7	2710.9
175°	2732.4	2718.6	2722.6	2736.3	2716.7
177.5°	2736.3	2722.6	2724.6	2738.5	2720.7
180°	2726.5	2726.5	2726.5	2726.5	2726.5



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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	12.73	13.69	13.60	14.58	15.70	12.30	13.26	13.17	14.15	15.27
	3H	14.40	15.26	15.28	16.16	17.30	13.93	14.79	14.81	15.68	16.83
	4H	14.99	15.80	15.89	16.71	17.86	14.52	15.33	15.41	16.24	17.39
	6H	15.40	16.15	16.30	17.06	18.23	14.92	15.67	15.83	16.58	17.75
	8H	15.50	16.22	16.42	17.15	18.31	15.03	15.74	15.94	16.67	17.84
	12H	15.55	16.24	16.47	17.16	18.35	15.07	15.76	15.99	16.68	17.87
4H	2H	13.21	14.02	14.10	14.92	16.08	12.86	13.67	13.76	14.58	15.73
	3H	15.08	15.76	15.99	16.69	17.87	14.69	15.37	15.60	16.30	17.47
	4H	15.80	16.42	16.72	17.35	18.54	15.39	16.01	16.31	16.94	18.14
	6H	16.32	16.85	17.25	17.81	19.01	15.91	16.45	16.84	17.40	18.60
	8H	16.47	16.97	17.41	17.92	19.13	16.06	16.56	17.00	17.51	18.72
	12H	16.55	17.00	17.51	17.96	19.18	16.13	16.58	17.08	17.54	18.76
8H	4H	16.00	16.50	16.94	17.45	18.66	15.64	16.14	16.58	17.09	18.30
	6H	16.64	17.05	17.60	18.04	19.25	16.28	16.69	17.24	17.68	18.89
	8H	16.86	17.23	17.83	18.20	19.43	16.49	16.86	17.46	17.84	19.06
	12H	17.00	17.32	17.97	18.29	19.57	16.61	16.93	17.59	17.91	19.18
12H	4H	15.99	16.44	16.95	17.41	18.63	15.64	16.09	16.60	17.06	18.27
	6H	16.67	17.04	17.64	18.01	19.24	16.32	16.68	17.29	17.66	18.89
	8H	16.92	17.24	17.89	18.21	19.49	16.56	16.88	17.54	17.85	19.13