

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: P912974

Luminaire Tested: DFN2DIP-TR4F0-100D120US850-FLLFLL

Issue Date: 11/21/2024

**Test Information**

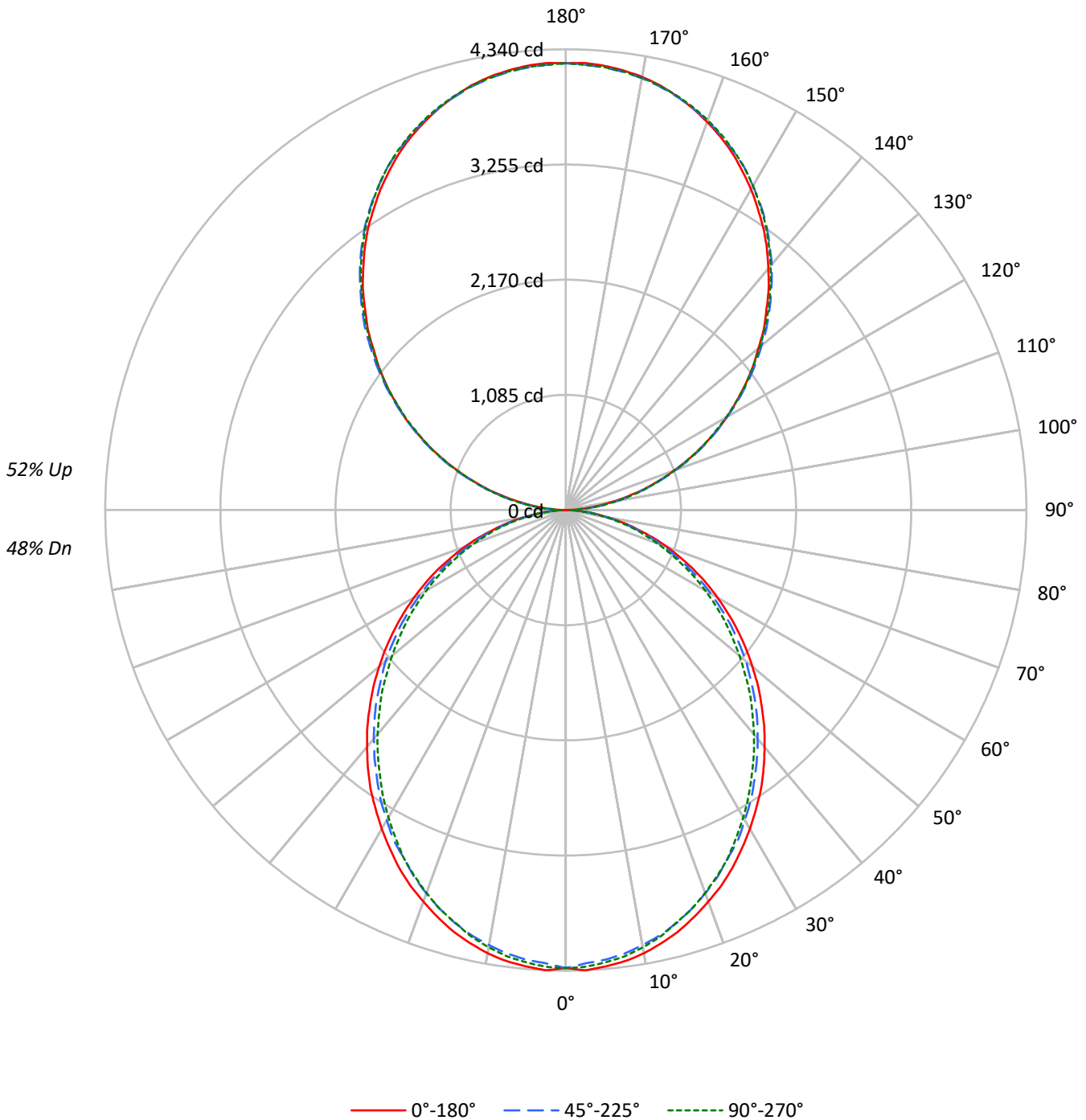
Test Method: LM-79-2019  
Report Number: P912974  
REPORT IS A COMBINATION OF REPORTS P900525 AND P897293  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-TR4F0-100D120US850-FLLFLL  
Description: 4 foot, Triangle Define Geo, with Direct Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 22756.7 lumens  
Efficiency: N/A  
Efficacy: 118.3 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: General Diffuse  
  
Input Watts (W): 192.4  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9972  
Total Harmonic Distortion (THDi): 0.128  
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	107	107	107	107	98	98	98	98	82	82	82	68	68	68	55	55	55	48			48
1	97	93	89	86	89	86	82	79	72	70	68	60	58	57	48	47	46	41			41
2	89	81	75	70	81	75	70	65	63	59	56	52	50	47	42	41	39	34			34
3	81	71	64	58	74	66	60	54	56	51	47	46	43	40	38	35	33	29			29
4	74	63	55	49	68	59	52	46	50	44	40	41	37	34	34	31	28	25			25
5	68	56	48	42	62	52	45	40	44	39	35	37	33	30	30	27	25	22			22
6	63	51	42	37	57	47	40	34	40	34	30	34	29	26	27	24	22	19			19
7	58	46	38	32	53	42	35	30	36	31	27	30	26	23	25	22	19	17			17
8	54	41	34	28	49	39	32	27	33	28	24	28	24	20	23	20	17	15			15
9	50	38	30	25	46	35	28	24	30	25	21	26	21	18	21	18	16	14			14
10	47	35	27	23	43	32	26	21	28	23	19	24	20	17	20	17	14	12			12

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

	0°	45°	90°
0°	3428	3428	3428
5°	3434	3380	3403
10°	3406	3335	3357
15°	3356	3280	3285
20°	3288	3204	3211
25°	3221	3112	3126
30°	3137	3027	3017
35°	3057	2927	2902
40°	2958	2826	2793
45°	2860	2725	2682
50°	2753	2618	2552
55°	2641	2495	2433
60°	2514	2349	2297
65°	2375	2198	2136
70°	2199	2013	1963
75°	1955	1792	1803
80°	1661	1511	1498
85°	1201	1025	993

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 90°  
 Vertical Angle: 90°  
 Luminance: 3280 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	406.1	1.8
10°-20°	1142.7	5.0
20°-30°	1679.4	7.4
30°-40°	1950.5	8.6
40°-50°	1948.1	8.6
50°-60°	1698.7	7.5
60°-70°	1255.7	5.5
70°-80°	710.4	3.1
80°-90°	199.5	0.9
90°-100°	260.4	1.1
100°-110°	827.5	3.6
110°-120°	1416.1	6.2
120°-130°	1862.4	8.2
130°-140°	2090.5	9.2
140°-150°	2050.0	9.0
150°-160°	1719.6	7.6
160°-170°	1140.4	5.0
170°-180°	398.6	1.8
0°-30°	3228.3	14.2
0°-40°	5178.7	22.8
0°-60°	8825.5	38.8
0°-90°	10991.1	48.3
90°-120°	2504.0	11.0
90°-150°	8506.9	37.4
90°-180°	11766.0	51.7
0°-180°	22756.7	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	4315	4315	4315	4315	4315	
5°	4315	4299	4253	4286	4278	410
15°	4108	4083	4029	4046	4025	1157
25°	3718	3685	3614	3622	3614	1711
35°	3208	3166	3100	3075	3054	2003
45°	2610	2581	2518	2473	2456	2014
55°	1975	1950	1900	1851	1830	1766
65°	1332	1307	1266	1228	1208	1317
75°	697	689	668	643	652	744
85°	170	166	162	149	145	190
90°	4	46	124	117	120	22
95°	185	221	227	227	221	206
105°	764	774	782	788	788	806
115°	1421	1442	1435	1431	1421	1406
125°	2067	2099	2089	2077	2073	1847
135°	2674	2713	2720	2717	2706	2066
145°	3246	3271	3291	3295	3281	2028
155°	3711	3722	3733	3751	3739	1708
165°	4038	4034	4034	4059	4041	1139
175°	4201	4191	4184	4209	4187	399
180°	4209	4209	4209	4209	4209	



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**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°
0°	4315.2	4315.2	4315.2	4315.2	4315.2
2.5°	4340.3	4319.6	4273.8	4315.2	4307.2
5°	4315.2	4298.9	4253.1	4286.2	4278.2
7.5°	4286.2	4261.4	4215.6	4249.1	4240.8
10°	4240.8	4211.8	4162.0	4195.0	4182.7
12.5°	4178.3	4153.6	4103.9	4124.6	4116.2
15°	4107.8	4083.2	4029.0	4045.7	4025.1
17.5°	4020.7	3996.1	3941.8	3962.6	3941.8
20°	3925.1	3900.5	3842.4	3854.7	3838.4
22.5°	3830.0	3792.7	3738.4	3738.4	3730.1
25°	3717.8	3684.8	3614.3	3622.2	3614.3
27.5°	3593.2	3564.1	3510.4	3498.1	3477.4
30°	3469.1	3435.6	3373.5	3361.2	3344.4
32.5°	3336.1	3311.5	3244.9	3219.9	3203.1
35°	3207.6	3166.2	3099.7	3074.6	3053.9
37.5°	3062.3	3024.8	2958.4	2929.3	2908.6
40°	2913.0	2879.5	2813.1	2776.2	2759.4
42.5°	2767.7	2734.2	2668.3	2626.4	2601.8
45°	2610.1	2581.1	2518.5	2473.2	2456.5
47.5°	2456.5	2427.5	2361.0	2315.1	2290.5
50°	2294.5	2273.8	2215.7	2157.6	2136.9
52.5°	2136.9	2107.9	2054.1	2008.4	1979.3
55°	1975.4	1950.3	1900.5	1850.7	1830.1
57.5°	1813.3	1792.6	1738.5	1688.8	1672.0
60°	1651.3	1635.0	1576.9	1531.1	1518.8
62.5°	1493.7	1464.7	1423.3	1381.9	1365.2
65°	1332.1	1307.1	1265.7	1228.2	1207.6
67.5°	1166.2	1145.0	1108.1	1079.1	1062.3
70°	1012.5	995.8	958.4	929.3	913.0
72.5°	854.9	838.2	817.6	788.5	776.1
75°	696.9	689.0	667.8	643.2	651.5
77.5°	556.1	539.3	530.9	518.6	506.3
80°	415.1	410.8	402.3	390.0	381.7
82.5°	282.2	282.2	278.2	261.5	261.5
85°	169.9	166.0	162.0	149.3	145.3
87.5°	74.9	66.4	58.1	45.8	41.4
90°	3.8	45.7	124.3	116.8	120.5
92.5°	78.6	106.6	110.3	114.2	114.2
95°	185.2	220.8	227.1	227.1	220.8
97.5°	308.3	341.4	355.3	355.3	355.3
100°	450.5	479.6	489.7	489.7	486.0
102.5°	600.2	621.7	635.7	639.6	635.7
105°	763.9	774.0	781.6	787.9	787.9
107.5°	926.2	941.5	941.5	944.0	926.2
110°	1083.6	1103.9	1103.9	1103.9	1093.8



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**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°
112.5°	1253.6	1275.2	1271.4	1261.3	1253.6
115°	1421.1	1441.5	1435.0	1431.3	1421.1
117.5°	1587.3	1615.3	1597.5	1587.3	1577.2
120°	1754.9	1782.7	1754.9	1754.9	1743.5
122.5°	1907.1	1942.6	1924.9	1914.7	1907.1
125°	2067.0	2098.7	2088.6	2077.2	2073.3
127.5°	2223.1	2262.4	2248.4	2233.2	2223.1
130°	2368.9	2414.6	2408.3	2400.7	2386.7
132.5°	2532.6	2568.2	2570.7	2552.9	2542.8
135°	2673.5	2712.8	2720.5	2716.6	2706.5
137.5°	2830.8	2862.6	2868.9	2866.3	2851.1
140°	2969.1	3000.8	3018.6	3018.6	3004.6
142.5°	3111.3	3143.0	3153.1	3156.9	3143.0
145°	3245.7	3271.1	3291.4	3295.3	3281.3
147.5°	3366.3	3398.0	3413.3	3419.6	3405.6
150°	3490.7	3512.2	3526.2	3537.6	3526.2
152.5°	3601.0	3622.5	3640.4	3654.4	3640.4
155°	3711.4	3721.6	3733.0	3750.7	3739.3
157.5°	3806.6	3814.2	3820.5	3845.9	3828.2
160°	3891.6	3899.2	3903.0	3924.6	3909.3
162.5°	3970.2	3970.2	3974.1	3998.2	3980.4
165°	4037.5	4033.8	4033.8	4059.1	4041.3
167.5°	4098.4	4087.0	4087.0	4112.4	4094.6
170°	4144.1	4133.9	4130.1	4155.5	4133.9
172.5°	4175.8	4165.6	4161.9	4187.3	4165.6
175°	4201.2	4191.0	4183.5	4208.8	4187.3
177.5°	4215.2	4205.0	4197.3	4219.0	4197.3
180°	4208.8	4208.8	4208.8	4208.8	4208.8



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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	11.39	12.23	12.36	13.22	14.51	10.95	11.80	11.93	12.79	14.08
	3H	13.04	13.80	14.03	14.80	16.12	12.57	13.33	13.55	14.33	15.64
	4H	13.63	14.35	14.63	15.35	16.67	13.16	13.88	14.15	14.88	16.20
	6H	14.03	14.69	15.04	15.70	17.03	13.56	14.22	14.56	15.22	16.56
	8H	14.13	14.76	15.15	15.78	17.12	13.66	14.29	14.67	15.31	16.64
	12H	14.18	14.78	15.20	15.80	17.15	13.70	14.30	14.72	15.32	16.67
4H	2H	11.85	12.56	12.85	13.56	14.89	11.50	12.22	12.50	13.22	14.54
	3H	13.71	14.31	14.72	15.34	16.68	13.32	13.92	14.33	14.94	16.28
	4H	14.42	14.97	15.44	15.99	17.35	14.02	14.57	15.04	15.59	16.95
	6H	14.94	15.41	15.97	16.45	17.81	14.53	15.00	15.56	16.04	17.40
	8H	15.09	15.53	16.12	16.56	17.94	14.68	15.12	15.71	16.15	17.53
	12H	15.16	15.56	16.21	16.61	17.99	14.74	15.14	15.79	16.19	17.57
8H	4H	14.62	15.06	15.65	16.10	17.47	14.26	14.70	15.29	15.74	17.11
	6H	15.25	15.61	16.30	16.69	18.06	14.89	15.25	15.94	16.33	17.70
	8H	15.47	15.79	16.53	16.85	18.24	15.10	15.42	16.16	16.49	17.88
	12H	15.60	15.88	16.67	16.94	18.37	15.22	15.50	16.28	16.56	17.99
12H	4H	14.60	15.00	15.65	16.05	17.43	14.25	14.65	15.30	15.70	17.08
	6H	15.28	15.60	16.34	16.66	18.05	14.93	15.25	15.99	16.31	17.70
	8H	15.52	15.80	16.59	16.86	18.29	15.16	15.45	16.23	16.50	17.94