

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: P910308

Luminaire Tested: DFN2DIP-TR4F0-120D090US840-RLLFLL

Issue Date: 11/21/2024

**Test Information**

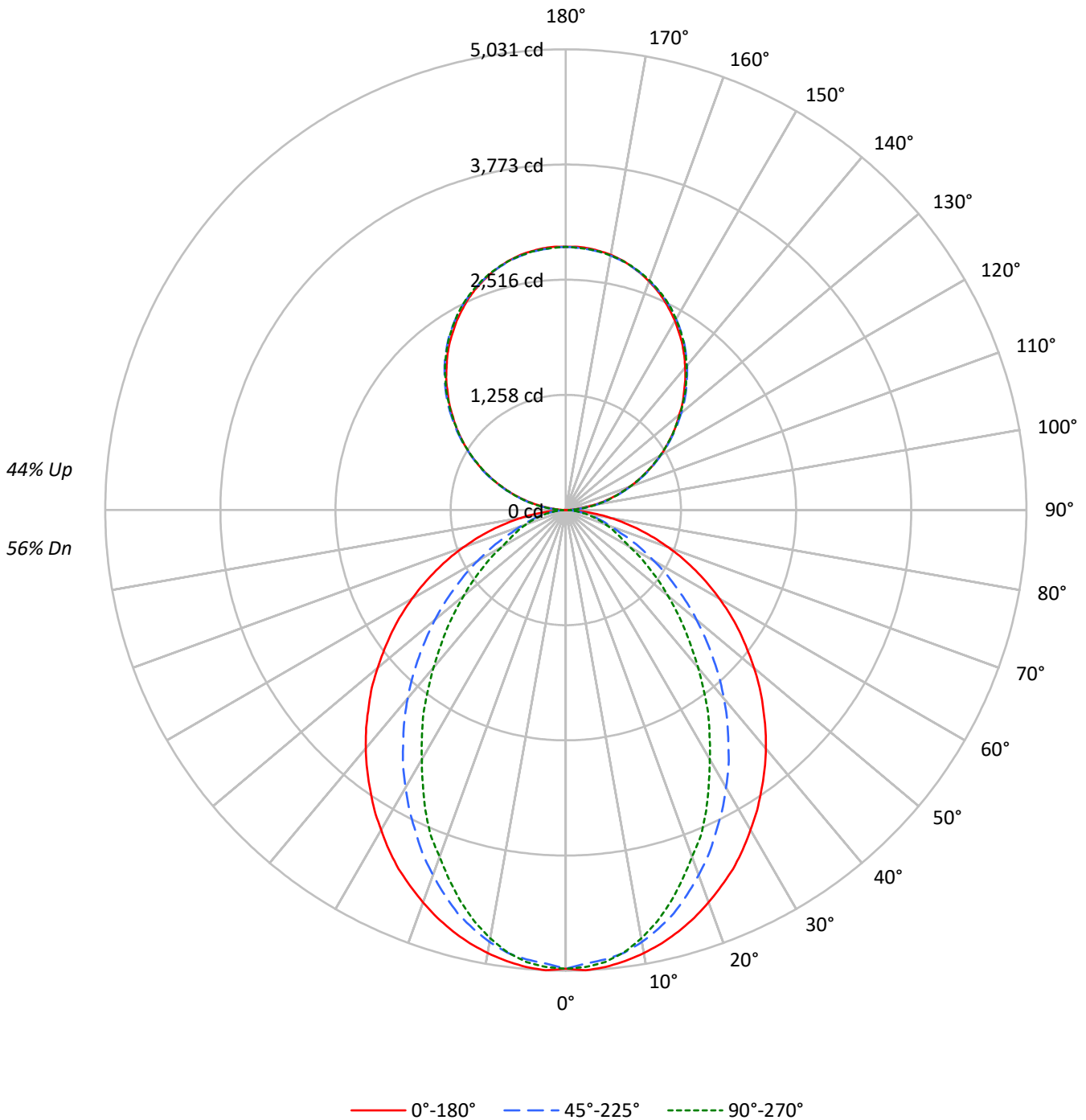
Test Method: LM-79-2019  
Report Number: P910308  
REPORT IS A COMBINATION OF REPORTS P900476 AND P897293  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-TR4F0-120D090US840-RLLFLL  
Description: 4 foot, Triangle Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 18344.2 lumens  
Efficiency: N/A  
Efficacy: 94.9 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: General Diffuse  
  
Input Watts (W): 193.3  
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				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	109	109	109	109	101	101	101	101	87	87	87	74	74	74	62	62	62	56				56
1	100	96	92	88	93	89	86	83	77	75	72	66	64	63	55	54	53	48				48
2	91	84	78	73	85	79	73	69	68	64	61	58	56	53	49	47	46	41				41
3	84	74	67	62	78	70	63	58	61	56	52	52	49	46	44	42	40	36				36
4	77	66	59	53	71	62	55	50	54	49	45	47	43	40	40	37	35	31				31
5	71	59	51	46	66	56	49	43	49	43	39	42	38	35	36	33	30	27				27
6	65	53	46	40	61	50	43	38	44	38	34	38	34	31	33	30	27	24				24
7	61	48	41	35	56	46	39	34	40	35	30	35	31	27	30	27	24	22				22
8	56	44	37	31	52	42	35	30	37	31	27	32	28	25	28	25	22	20				20
9	53	41	33	28	49	38	32	27	34	28	25	30	25	22	26	23	20	18				18
10	49	37	30	25	46	35	29	24	31	26	22	28	23	20	24	21	18	16				16

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

	0°	45°	90°
0°	3979	3979	3979
5°	3985	3916	3941
10°	3946	3839	3812
15°	3892	3712	3614
20°	3820	3537	3371
25°	3746	3341	3136
30°	3647	3140	2838
35°	3551	2924	2576
40°	3452	2700	2276
45°	3338	2452	2004
50°	3219	2201	1738
55°	3096	1934	1483
60°	2953	1654	1221
65°	2789	1369	1098
70°	2589	1104	994
75°	2339	973	904
80°	1976	816	783
85°	1378	544	588

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 3338 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	469.4	2.6
10°-20°	1288.6	7.0
20°-30°	1809.2	9.9
30°-40°	1972.1	10.8
40°-50°	1812.6	9.9
50°-60°	1423.5	7.8
60°-70°	926.6	5.1
70°-80°	476.9	2.6
80°-90°	129.9	0.7
90°-100°	177.9	1.0
100°-110°	565.2	3.1
110°-120°	967.2	5.3
120°-130°	1272.0	6.9
130°-140°	1427.7	7.8
140°-150°	1400.0	7.6
150°-160°	1174.4	6.4
160°-170°	778.9	4.2
170°-180°	272.2	1.5
0°-30°	3567.2	19.4
0°-40°	5539.3	30.2
0°-60°	8775.3	47.8
0°-90°	10308.8	56.2
90°-120°	1710.2	9.3
90°-150°	5809.9	31.7
90°-180°	8035.0	43.8
0°-180°	18344.2	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	5008	5008	5008	5008	5008	
5°	5008	4986	4927	4968	4954	475
15°	4764	4714	4560	4474	4429	1342
25°	4324	4179	3880	3694	3626	1989
35°	3726	3495	3096	2810	2710	2332
45°	3046	2742	2266	1944	1836	2352
55°	2316	1963	1473	1201	1115	2070
65°	1564	1196	789	635	621	1550
75°	834	516	363	331	326	882
85°	195	100	86	86	86	224
90°	3	31	85	80	82	18
95°	126	151	155	155	151	141
105°	522	529	534	538	538	551
115°	971	984	980	978	971	960
125°	1412	1433	1426	1419	1416	1261
135°	1826	1853	1858	1855	1848	1411
145°	2217	2234	2248	2250	2241	1385
155°	2535	2542	2550	2562	2554	1167
165°	2757	2755	2755	2772	2760	778
175°	2869	2862	2857	2874	2860	273
180°	2874	2874	2874	2874	2874	



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**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°
0°	5008.5	5008.5	5008.5	5008.5	5008.5
2.5°	5031.2	5008.5	4958.5	5004.2	4995.0
5°	5008.5	4985.9	4926.7	4967.6	4954.2
7.5°	4967.6	4940.7	4877.2	4895.0	4872.4
10°	4913.3	4881.6	4791.1	4777.2	4750.3
12.5°	4845.4	4804.6	4681.9	4655.1	4605.1
15°	4763.7	4713.7	4559.8	4473.7	4428.6
17.5°	4668.5	4595.9	4405.4	4306.0	4233.4
20°	4559.8	4469.0	4242.4	4129.4	4029.4
22.5°	4442.0	4337.7	4074.6	3920.7	3852.9
25°	4324.2	4178.9	3879.8	3694.2	3625.9
27.5°	4183.8	4029.4	3698.5	3485.6	3381.1
30°	4034.2	3861.6	3499.0	3268.1	3145.5
32.5°	3889.0	3680.3	3309.0	3036.9	2923.4
35°	3726.0	3494.6	3095.9	2810.4	2710.3
37.5°	3567.2	3317.7	2896.4	2583.3	2470.3
40°	3399.4	3127.8	2687.8	2366.0	2248.2
42.5°	3227.2	2937.3	2479.5	2143.8	2030.8
45°	3046.0	2742.1	2266.4	1944.3	1835.5
47.5°	2873.8	2552.1	2062.5	1740.4	1640.8
50°	2683.4	2361.7	1863.0	1549.9	1455.2
52.5°	2497.3	2157.3	1672.5	1373.4	1287.4
55°	2316.0	1962.6	1473.0	1201.2	1115.2
57.5°	2130.3	1767.8	1296.5	1042.6	970.0
60°	1940.0	1577.3	1110.3	879.6	807.0
62.5°	1754.3	1391.7	951.7	734.4	698.2
65°	1563.9	1196.5	788.7	634.8	620.9
67.5°	1382.6	1015.1	634.8	557.3	543.9
70°	1192.1	838.7	525.6	480.4	462.1
72.5°	1010.9	675.2	439.5	403.4	394.4
75°	833.8	516.4	362.6	330.8	326.5
77.5°	657.4	366.9	285.7	267.4	258.2
80°	493.9	263.1	217.3	199.5	199.5
82.5°	344.4	176.9	149.6	140.4	140.4
85°	194.8	99.6	86.0	86.0	86.0
87.5°	72.6	36.1	36.1	31.7	31.7
90°	2.6	31.2	84.9	79.7	82.3
92.5°	53.7	72.8	75.4	78.0	78.0
95°	126.5	150.8	155.1	155.1	150.8
97.5°	210.6	233.1	242.7	242.7	242.7
100°	307.6	327.6	334.5	334.5	331.9
102.5°	409.9	424.6	434.1	436.8	434.1
105°	521.7	528.6	533.8	538.2	538.2
107.5°	632.6	643.0	643.0	644.7	632.6
110°	740.0	754.0	754.0	754.0	747.0



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**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°
112.5°	856.2	870.9	868.3	861.4	856.2
115°	970.6	984.4	980.1	977.5	970.6
117.5°	1084.1	1103.2	1091.1	1084.1	1077.1
120°	1198.5	1217.5	1198.5	1198.5	1190.6
122.5°	1302.4	1326.8	1314.6	1307.7	1302.4
125°	1411.7	1433.3	1426.4	1418.6	1416.0
127.5°	1518.2	1545.1	1535.6	1525.2	1518.2
130°	1617.9	1649.1	1644.8	1639.5	1630.0
132.5°	1729.7	1753.9	1755.7	1743.5	1736.7
135°	1825.8	1852.7	1858.0	1855.3	1848.5
137.5°	1933.3	1955.0	1959.3	1957.6	1947.2
140°	2027.8	2049.4	2061.5	2061.5	2052.0
142.5°	2124.9	2146.5	2153.4	2156.1	2146.5
145°	2216.8	2234.0	2247.9	2250.5	2241.0
147.5°	2299.1	2320.7	2331.1	2335.4	2325.9
150°	2384.0	2398.7	2408.2	2416.0	2408.2
152.5°	2459.3	2474.1	2486.2	2495.8	2486.2
155°	2534.8	2541.6	2549.5	2561.6	2553.8
157.5°	2599.7	2604.9	2609.3	2626.6	2614.4
160°	2657.8	2663.0	2665.6	2680.3	2669.9
162.5°	2711.5	2711.5	2714.1	2730.6	2718.5
165°	2757.4	2754.8	2754.8	2772.2	2760.1
167.5°	2799.0	2791.3	2791.3	2808.5	2796.4
170°	2830.2	2823.3	2820.8	2838.0	2823.3
172.5°	2851.9	2845.0	2842.4	2859.7	2845.0
175°	2869.2	2862.3	2857.1	2874.5	2859.7
177.5°	2878.7	2871.9	2866.6	2881.3	2866.6
180°	2874.5	2874.5	2874.5	2874.5	2874.5



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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	12.50	13.38	13.41	14.31	15.49	8.47	9.36	9.38	10.28	11.46
	3H	14.18	14.97	15.10	15.90	17.11	9.67	10.46	10.59	11.39	12.60
	4H	14.79	15.54	15.73	16.47	17.69	10.12	10.87	11.06	11.80	13.02
	6H	15.22	15.90	16.16	16.85	18.08	10.44	11.13	11.39	12.07	13.30
	8H	15.34	16.00	16.30	16.96	18.18	10.54	11.19	11.49	12.15	13.38
	12H	15.41	16.03	16.37	16.98	18.23	10.58	11.20	11.54	12.16	13.41
4H	2H	12.52	13.27	13.47	14.21	15.42	9.07	9.82	10.02	10.76	11.98
	3H	14.36	14.98	15.31	15.95	17.18	10.43	11.05	11.38	12.02	13.25
	4H	15.05	15.62	16.01	16.58	17.84	10.98	11.55	11.94	12.51	13.76
	6H	15.57	16.06	16.54	17.04	18.30	11.40	11.89	12.38	12.88	14.13
	8H	15.75	16.20	16.72	17.18	18.45	11.53	11.99	12.51	12.97	14.24
	12H	15.84	16.25	16.84	17.25	18.52	11.60	12.01	12.60	13.01	14.28
8H	4H	15.02	15.48	16.00	16.46	17.73	11.26	11.72	12.24	12.70	13.97
	6H	15.59	15.97	16.59	16.99	18.26	11.79	12.16	12.79	13.18	14.45
	8H	15.81	16.14	16.82	17.15	18.43	11.98	12.31	12.99	13.32	14.60
	12H	15.95	16.24	16.96	17.24	18.58	12.10	12.39	13.11	13.39	14.73
12H	4H	14.98	15.39	15.97	16.38	17.66	11.27	11.68	12.27	12.68	13.95
	6H	15.57	15.90	16.58	16.91	18.19	11.84	12.17	12.84	13.18	14.46
	8H	15.79	16.08	16.80	17.08	18.42	12.05	12.34	13.06	13.34	14.68