

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: P907447

Luminaire Tested: DFN2DIP-TR4F0-080D120US835-FLONL

Issue Date: 11/21/2024

**Test Information**

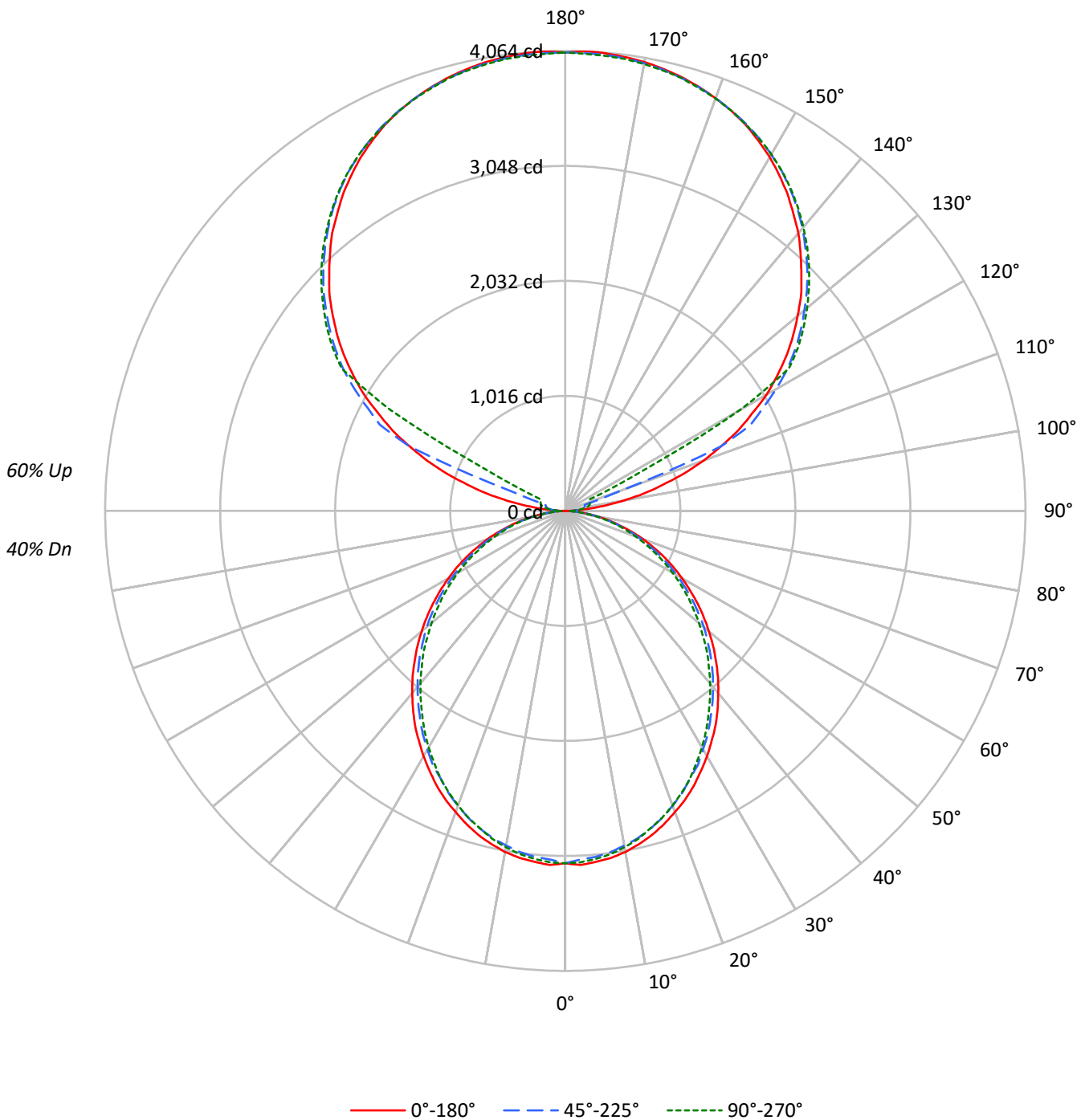
Test Method: LM-79-2019  
Report Number: P907447  
REPORT IS A COMBINATION OF REPORTS P902041 AND P898849  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-TR4F0-080D120US835-FLLONL  
Description: 4 foot, Triangle Define Geo, with Direct Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 19800.0 lumens  
Efficiency: N/A  
Efficacy: 119.0 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): 166.4  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9957  
Total Harmonic Distortion (THDi): 0.049  
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	105	105	105	105	95	95	95	95	78	78	78	62	62	62	47	47	47	40			
1	96	91	87	84	87	83	80	77	68	66	64	54	53	51	41	41	40	34			
2	87	80	74	69	79	73	68	63	60	56	53	48	45	43	37	35	33	28			
3	79	70	63	57	72	64	58	53	53	48	44	42	39	36	32	30	28	24			
4	73	62	54	48	66	57	50	45	47	42	38	37	34	31	29	26	24	21			
5	67	55	47	41	60	50	44	38	42	37	33	34	30	27	26	23	21	18			
6	61	49	41	36	56	45	38	33	38	32	28	30	26	23	24	21	19	16			
7	57	45	37	31	51	41	34	29	34	29	25	28	24	21	22	19	17	14			
8	52	40	33	27	48	37	30	26	31	26	22	25	21	18	20	17	15	12			
9	49	37	29	24	44	34	27	23	28	23	20	23	19	17	18	15	13	11			
10	46	34	27	22	41	31	25	20	26	21	18	21	18	15	17	14	12	10			

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

	0°	45°	90°
0°	2473	2473	2473
5°	2477	2438	2455
10°	2457	2406	2422
15°	2421	2366	2370
20°	2372	2311	2316
25°	2323	2245	2255
30°	2263	2184	2176
35°	2205	2112	2094
40°	2134	2039	2015
45°	2063	1965	1934
50°	1986	1889	1841
55°	1905	1800	1755
60°	1813	1694	1657
65°	1714	1585	1541
70°	1586	1452	1416
75°	1410	1293	1301
80°	1198	1090	1081
85°	867	740	716

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 90°  
 Vertical Angle: 90°  
 Luminance: 2150 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	293.0	1.5
10°-20°	824.3	4.2
20°-30°	1211.5	6.1
30°-40°	1407.0	7.1
40°-50°	1405.3	7.1
50°-60°	1225.4	6.2
60°-70°	905.8	4.6
70°-80°	512.5	2.6
80°-90°	142.4	0.7
90°-100°	133.5	0.7
100°-110°	497.8	2.5
110°-120°	1320.3	6.7
120°-130°	2189.8	11.1
130°-140°	2326.1	11.7
140°-150°	2161.8	10.9
150°-160°	1738.1	8.8
160°-170°	1119.9	5.7
170°-180°	385.5	1.9
0°-30°	2328.8	11.8
0°-40°	3735.8	18.9
0°-60°	6366.4	32.2
0°-90°	7927.1	40.0
90°-120°	1951.7	9.9
90°-150°	8629.4	43.6
90°-180°	11873.0	60.0
0°-180°	19800.0	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	3113	3113	3113	3113	3113	
5°	3113	3101	3068	3092	3086	295
15°	2963	2946	2906	2918	2904	835
25°	2682	2658	2607	2613	2607	1234
35°	2314	2284	2236	2218	2203	1445
45°	1883	1862	1817	1784	1772	1453
55°	1425	1407	1371	1335	1320	1274
65°	961	943	913	886	871	950
75°	503	497	482	464	470	537
85°	123	120	117	108	105	137
90°	3	35	58	73	79	18
95°	190	94	114	129	126	225
105°	891	979	179	211	223	952
115°	1685	1735	1808	451	240	1659
125°	2382	2421	2476	2497	2506	2125
135°	2948	2995	3021	3051	3045	2277
145°	3420	3417	3467	3487	3472	2139
155°	3766	3739	3775	3792	3769	1735
165°	3968	3950	3959	3980	3959	1121
175°	4058	4038	4044	4064	4035	386
180°	4050	4050	4050	4050	4050	



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**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°
0°	3112.8	3112.8	3112.8	3112.8	3112.8
2.5°	3130.9	3116.0	3083.0	3112.8	3107.1
5°	3112.8	3101.1	3068.1	3091.9	3086.2
7.5°	3091.9	3074.1	3041.1	3065.2	3059.2
10°	3059.2	3038.2	3002.3	3026.1	3017.3
12.5°	3014.1	2996.3	2960.4	2975.3	2969.3
15°	2963.3	2945.5	2906.4	2918.5	2903.6
17.5°	2900.4	2882.6	2843.5	2858.5	2843.5
20°	2831.5	2813.7	2771.8	2780.7	2768.9
22.5°	2762.9	2735.9	2696.8	2696.8	2690.8
25°	2681.9	2658.1	2607.3	2613.0	2607.3
27.5°	2592.0	2571.1	2532.3	2523.4	2508.5
30°	2502.5	2478.3	2433.6	2424.7	2412.6
32.5°	2406.6	2388.8	2340.8	2322.7	2310.7
35°	2313.8	2284.0	2236.0	2217.9	2203.0
37.5°	2209.0	2182.0	2134.1	2113.1	2098.2
40°	2101.4	2077.2	2029.3	2002.6	1990.5
42.5°	1996.6	1972.4	1924.8	1894.6	1876.9
45°	1882.9	1861.9	1816.8	1784.1	1772.1
47.5°	1772.1	1751.1	1703.1	1670.1	1652.3
50°	1655.2	1640.3	1598.3	1556.4	1541.5
52.5°	1541.5	1520.5	1481.8	1448.8	1427.8
55°	1424.9	1406.8	1371.0	1335.1	1320.1
57.5°	1308.1	1293.2	1254.1	1218.2	1206.1
60°	1191.2	1179.5	1137.5	1104.5	1095.6
62.5°	1077.5	1056.6	1026.7	996.9	984.8
65°	961.0	942.9	913.0	886.0	871.1
67.5°	841.2	826.0	799.3	778.4	766.3
70°	730.4	718.3	691.4	670.4	658.6
72.5°	616.7	604.7	589.7	568.8	559.9
75°	502.7	497.0	481.8	464.0	470.0
77.5°	401.1	389.0	383.0	374.1	365.2
80°	299.5	296.3	290.3	281.4	275.3
82.5°	203.6	203.6	200.7	188.6	188.6
85°	122.6	119.7	116.9	107.7	104.8
87.5°	54.0	48.0	41.9	33.0	29.9
90°	2.8	35.1	58.5	73.4	79.0
92.5°	73.4	61.6	70.3	76.2	79.0
95°	190.3	93.6	114.1	129.1	126.0
97.5°	342.8	102.7	149.3	158.3	161.1
100°	518.8	117.3	167.0	190.3	196.3
102.5°	712.0	706.4	172.9	205.0	214.0
105°	890.8	978.9	178.9	210.9	222.7
107.5°	1098.9	1172.0	184.8	216.8	228.6
110°	1298.3	1359.6	512.9	219.9	231.4



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**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°
112.5°	1485.9	1538.4	1488.7	225.5	234.5
115°	1684.9	1734.7	1808.1	451.3	240.5
117.5°	1857.9	1916.4	1966.5	1547.1	779.5
120°	2051.4	2095.2	2148.1	2183.3	1787.6
122.5°	2215.3	2262.3	2321.1	2338.5	2341.6
125°	2382.3	2420.6	2476.3	2496.8	2505.5
127.5°	2534.7	2575.8	2620.0	2649.2	2652.0
130°	2678.4	2725.4	2757.4	2789.8	2787.0
132.5°	2824.9	2863.2	2895.2	2921.7	2918.9
135°	2948.1	2995.1	3021.2	3050.8	3044.9
137.5°	3076.9	3112.0	3141.6	3170.8	3162.1
140°	3202.9	3226.5	3258.5	3285.0	3270.4
142.5°	3308.6	3329.2	3367.1	3390.4	3375.8
145°	3420.0	3416.9	3466.6	3487.2	3472.5
147.5°	3516.4	3507.7	3557.5	3572.1	3560.6
150°	3610.3	3589.8	3636.8	3654.2	3639.6
152.5°	3689.3	3666.0	3709.9	3727.6	3707.1
155°	3765.5	3739.4	3774.6	3792.0	3768.7
157.5°	3827.1	3803.8	3830.3	3850.8	3827.1
160°	3880.0	3862.3	3880.0	3897.4	3876.9
162.5°	3926.7	3909.3	3923.9	3944.4	3918.0
165°	3967.7	3950.3	3959.0	3979.6	3959.0
167.5°	4000.1	3982.3	3991.4	4011.9	3985.5
170°	4026.5	4008.8	4014.7	4035.2	4008.8
172.5°	4043.9	4026.5	4032.5	4053.0	4026.5
175°	4058.5	4038.0	4043.9	4064.5	4035.2
177.5°	4064.5	4043.9	4047.1	4067.6	4041.2
180°	4049.9	4049.9	4049.9	4049.9	4049.9



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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	9.42	10.19	10.45	11.24	12.65	8.98	9.76	10.02	10.81	12.21
	3H	11.07	11.77	12.12	12.82	14.25	10.60	11.29	11.64	12.35	13.77
	4H	11.65	12.31	12.71	13.37	14.80	11.18	11.84	12.24	12.90	14.33
	6H	12.05	12.66	13.12	13.72	15.16	11.57	12.18	12.64	13.24	14.69
	8H	12.15	12.73	13.22	13.81	15.24	11.68	12.26	12.75	13.33	14.77
	12H	12.20	12.75	13.27	13.82	15.28	11.72	12.27	12.79	13.33	14.80
4H	2H	9.87	10.53	10.93	11.58	13.02	9.52	10.18	10.59	11.24	12.67
	3H	11.73	12.28	12.80	13.36	14.81	11.33	11.88	12.41	12.97	14.41
	4H	12.44	12.94	13.52	14.02	15.48	12.03	12.54	13.11	13.61	15.08
	6H	12.95	13.38	14.03	14.48	15.94	12.54	12.97	13.63	14.07	15.53
	8H	13.09	13.50	14.18	14.59	16.07	12.68	13.09	13.77	14.18	15.65
	12H	13.16	13.53	14.27	14.63	16.11	12.74	13.11	13.85	14.21	15.69
8H	4H	12.63	13.03	13.71	14.12	15.60	12.27	12.67	13.35	13.76	15.24
	6H	13.25	13.59	14.36	14.72	16.19	12.89	13.23	14.00	14.36	15.83
	8H	13.47	13.77	14.59	14.88	16.37	13.10	13.40	14.22	14.51	16.01
	12H	13.60	13.86	14.72	14.97	16.50	13.22	13.48	14.34	14.58	16.12
12H	4H	12.61	12.97	13.71	14.08	15.56	12.26	12.62	13.36	13.73	15.21
	6H	13.28	13.58	14.40	14.69	16.18	12.93	13.23	14.05	14.34	15.83
	8H	13.52	13.78	14.64	14.89	16.42	13.16	13.42	14.29	14.53	16.06