

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: P904851

Luminaire Tested: DFN2DIP-TR4F0-120D090US830-FLLONL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P904851
REPORT IS A COMBINATION OF REPORTS P901995 AND P898849
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-TR4F0-120D090US830-FLLONL
Description: 4 foot, Triangle Define Geo, with Direct Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

Summary

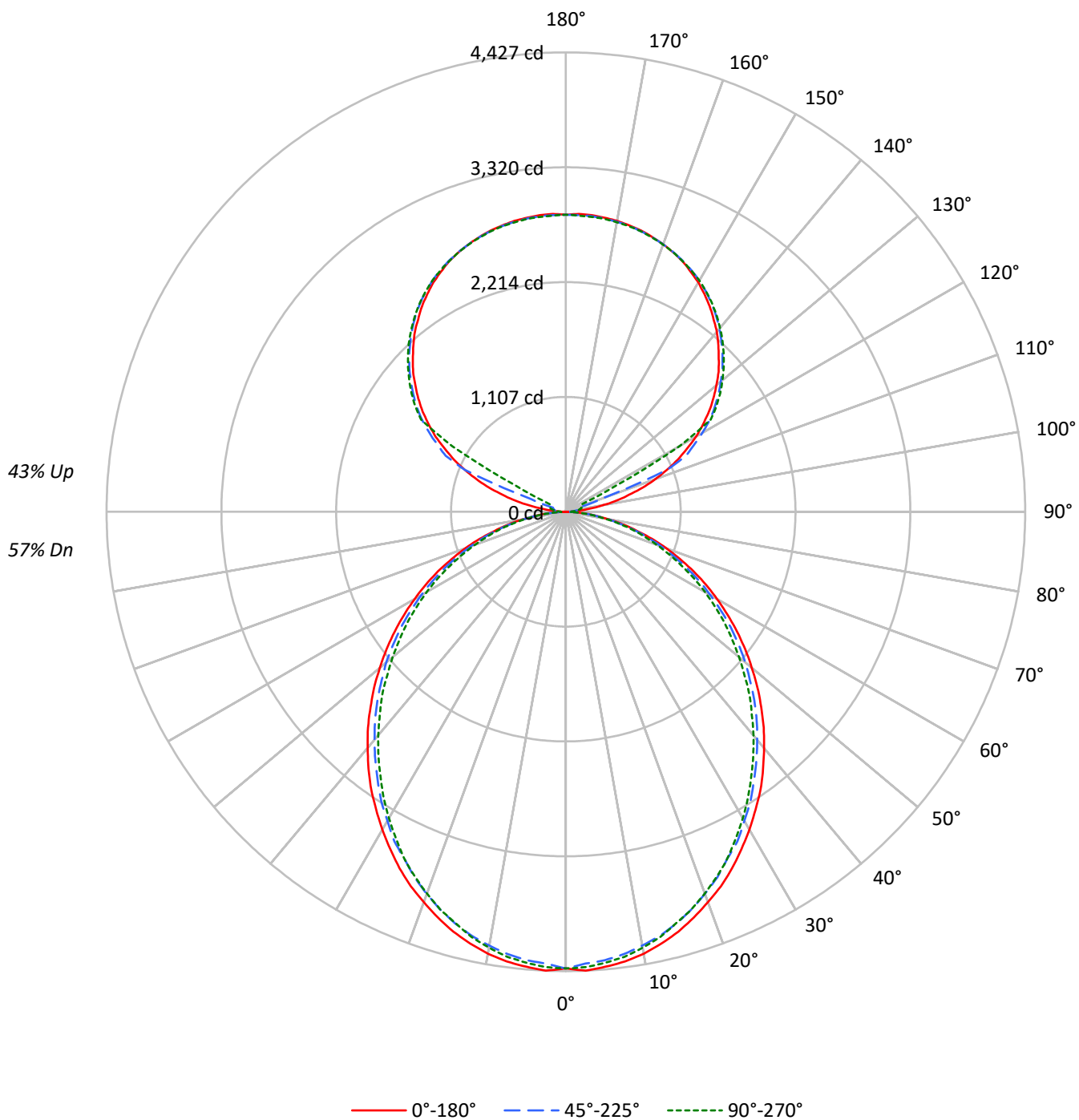
Lumens per Lamp: N/A
Luminaire Lumens: 19595.4 lumens
Efficiency: N/A
Efficacy: 101.4 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.43' x L: 3.96' x H: 0.1')
CIE Type: General Diffuse

Input Watts (W): 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
RC	80					70					50					30					10
RW	70	50	30	10		70	50	30	10		50	30	10		50	30	10		50	30	10
RCR																					
0	109	109	109	109		101	101	101	101		87	87	87		74	74	74		63	63	63
1	99	95	91	88		92	89	85	82		77	74	72		66	64	62		55	54	53
2	91	83	77	72		84	77	72	67		67	63	59		58	55	52		49	47	45
3	83	73	66	60		77	68	62	56		59	54	50		51	47	44		43	40	38
4	76	65	57	50		70	61	53	48		53	47	43		45	41	38		39	35	33
5	69	58	49	43		64	54	47	41		47	41	37		41	36	33		35	31	29
6	64	52	44	38		59	49	41	36		43	37	32		37	32	29		32	28	25
7	59	47	39	33		55	44	37	32		39	33	28		34	29	25		29	25	22
8	55	43	35	29		51	40	33	28		35	29	25		31	26	23		27	23	20
9	51	39	31	26		48	37	30	25		32	27	23		28	24	20		25	21	18
10	48	36	28	24		45	34	27	22		30	24	20		26	22	18		23	19	17

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	3496	3496	3496
5°	3502	3448	3471
10°	3474	3401	3424
15°	3423	3345	3350
20°	3354	3267	3275
25°	3285	3174	3188
30°	3199	3088	3077
35°	3117	2985	2960
40°	3017	2882	2849
45°	2917	2779	2735
50°	2808	2670	2603
55°	2693	2545	2482
60°	2564	2396	2343
65°	2423	2241	2179
70°	2243	2053	2002
75°	1994	1828	1839
80°	1694	1541	1528
85°	1225	1046	1013

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 2917 cd/sqm

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	414.2	2.1
10°-20°	1165.5	5.9
20°-30°	1712.8	8.7
30°-40°	1989.3	10.2
40°-50°	1986.8	10.1
50°-60°	1732.4	8.8
60°-70°	1280.6	6.5
70°-80°	724.6	3.7
80°-90°	196.3	1.0
90°-100°	94.4	0.5
100°-110°	351.9	1.8
110°-120°	933.3	4.8
120°-130°	1548.0	7.9
130°-140°	1644.3	8.4
140°-150°	1528.2	7.8
150°-160°	1228.6	6.3
160°-170°	791.7	4.0
170°-180°	272.5	1.4
0°-30°	3292.4	16.8
0°-40°	5281.7	27.0
0°-60°	9000.9	45.9
0°-90°	11202.4	57.2
90°-120°	1379.6	7.0
90°-150°	6100.2	31.1
90°-180°	8393.0	42.8
0°-180°	19595.4	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	4401	4401	4401	4401	4401	
5°	4401	4384	4338	4371	4363	418
15°	4190	4164	4109	4126	4105	1180
25°	3792	3758	3686	3694	3686	1745
35°	3271	3229	3161	3136	3115	2043
45°	2662	2632	2569	2522	2505	2054
55°	2015	1989	1938	1888	1866	1801
65°	1359	1333	1291	1253	1232	1343
75°	711	703	681	656	664	759
85°	173	169	165	152	148	193
90°	2	25	41	52	56	18
95°	135	66	81	91	89	159
105°	630	692	126	149	157	673
115°	1191	1226	1278	319	170	1173
125°	1684	1711	1750	1765	1771	1502
135°	2084	2117	2136	2157	2152	1610
145°	2418	2415	2451	2465	2455	1512
155°	2662	2644	2668	2681	2664	1227
165°	2805	2792	2799	2813	2799	792
175°	2869	2854	2859	2873	2852	273
180°	2863	2863	2863	2863	2863	

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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	4401.0	4401.0	4401.0	4401.0	4401.0
2.5°	4426.6	4405.4	4358.8	4401.0	4392.9
5°	4401.0	4384.3	4337.7	4371.3	4363.2
7.5°	4371.3	4346.2	4299.5	4333.6	4325.1
10°	4325.1	4295.4	4244.7	4278.4	4265.9
12.5°	4261.3	4236.2	4185.5	4206.6	4198.0
15°	4189.5	4164.3	4109.1	4126.2	4105.1
17.5°	4100.6	4075.5	4020.2	4041.3	4020.2
20°	4003.2	3978.0	3918.8	3931.3	3914.8
22.5°	3906.2	3868.0	3812.8	3812.8	3804.3
25°	3791.7	3758.0	3686.2	3694.3	3686.2
27.5°	3664.6	3635.0	3580.2	3567.6	3546.6
30°	3538.0	3503.9	3440.6	3428.0	3411.0
32.5°	3402.4	3377.3	3309.5	3283.9	3266.9
35°	3271.3	3229.1	3161.3	3135.7	3114.6
37.5°	3123.1	3085.0	3017.2	2987.6	2966.5
40°	2971.0	2936.9	2869.0	2831.3	2814.2
42.5°	2822.8	2788.7	2721.3	2678.7	2653.5
45°	2662.0	2632.4	2568.6	2522.4	2505.4
47.5°	2505.4	2475.7	2407.9	2361.3	2336.1
50°	2340.1	2319.0	2259.7	2200.5	2179.3
52.5°	2179.3	2149.8	2095.0	2048.2	2018.6
55°	2014.6	1989.0	1938.2	1887.5	1866.4
57.5°	1849.4	1828.2	1773.0	1722.3	1705.2
60°	1684.1	1667.5	1608.3	1561.6	1549.0
62.5°	1523.4	1493.7	1451.6	1409.4	1392.3
65°	1358.7	1333.0	1290.8	1252.6	1231.6
67.5°	1189.4	1167.8	1130.1	1100.5	1083.5
70°	1032.6	1015.6	977.4	947.8	931.2
72.5°	871.9	854.9	833.8	804.2	791.5
75°	710.8	702.7	681.1	656.0	664.5
77.5°	567.0	550.0	541.5	528.9	516.3
80°	423.4	418.9	410.4	397.8	389.3
82.5°	287.8	287.8	283.8	266.7	266.7
85°	173.3	169.3	165.2	152.2	148.2
87.5°	76.3	67.8	59.3	46.7	42.2
90°	2.0	24.9	41.3	51.9	55.8
92.5°	51.9	43.5	49.7	53.9	55.8
95°	134.6	66.2	80.7	91.2	89.1
97.5°	242.3	72.6	105.6	111.9	113.9
100°	366.7	82.9	118.1	134.6	138.7
102.5°	503.3	499.4	122.2	144.9	151.3
105°	629.7	692.0	126.4	149.1	157.4
107.5°	776.8	828.5	130.6	153.3	161.6
110°	917.8	961.1	362.6	155.4	163.6



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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	1050.4	1087.5	1052.3	159.4	165.8
115°	1191.1	1226.2	1278.2	319.1	169.9
117.5°	1313.3	1354.7	1390.1	1093.7	551.0
120°	1450.1	1481.1	1518.5	1543.3	1263.7
122.5°	1566.0	1599.2	1640.8	1653.0	1655.3
125°	1684.0	1711.1	1750.5	1765.0	1771.1
127.5°	1791.8	1820.8	1852.1	1872.7	1874.7
130°	1893.4	1926.7	1949.3	1972.1	1970.2
132.5°	1997.0	2024.0	2046.6	2065.4	2063.4
135°	2084.1	2117.2	2135.7	2156.6	2152.5
137.5°	2175.1	2199.9	2220.8	2241.5	2235.3
140°	2264.1	2280.9	2303.5	2322.1	2311.9
142.5°	2338.9	2353.4	2380.2	2396.7	2386.4
145°	2417.6	2415.4	2450.6	2465.1	2454.8
147.5°	2485.8	2479.6	2514.8	2525.2	2517.0
150°	2552.2	2537.7	2570.9	2583.1	2572.9
152.5°	2608.0	2591.5	2622.5	2635.1	2620.6
155°	2661.9	2643.5	2668.2	2680.6	2664.1
157.5°	2705.5	2689.0	2707.6	2722.2	2705.5
160°	2742.8	2730.3	2742.8	2755.1	2740.6
162.5°	2775.8	2763.4	2773.8	2788.3	2769.7
165°	2804.8	2792.5	2798.7	2813.2	2798.7
167.5°	2827.7	2815.2	2821.5	2836.0	2817.4
170°	2846.4	2833.8	2838.0	2852.5	2833.8
172.5°	2858.7	2846.4	2850.5	2865.0	2846.4
175°	2869.0	2854.5	2858.7	2873.2	2852.5
177.5°	2873.2	2858.7	2860.9	2875.4	2856.8
180°	2862.9	2862.9	2862.9	2862.9	2862.9

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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	12.25	13.18	13.15	14.10	15.26	11.82	12.75	12.71	13.66	14.83
	3H	13.92	14.75	14.82	15.67	16.86	13.45	14.28	14.35	15.20	16.39
	4H	14.51	15.30	15.43	16.22	17.42	14.04	14.82	14.96	15.75	16.95
	6H	14.91	15.64	15.84	16.57	17.79	14.44	15.16	15.37	16.10	17.31
	8H	15.02	15.71	15.96	16.66	17.87	14.54	15.24	15.48	16.19	17.40
	12H	15.07	15.73	16.01	16.67	17.91	14.59	15.25	15.53	16.19	17.43
4H	2H	12.72	13.51	13.65	14.44	15.64	12.38	13.17	13.30	14.09	15.29
	3H	14.59	15.25	15.53	16.21	17.43	14.20	14.86	15.14	15.82	17.03
	4H	15.31	15.91	16.26	16.87	18.10	14.91	15.51	15.85	16.46	17.70
	6H	15.83	16.35	16.79	17.33	18.56	15.42	15.94	16.38	16.92	18.16
	8H	15.98	16.47	16.94	17.44	18.69	15.57	16.05	16.53	17.02	18.28
	12H	16.06	16.50	17.04	17.48	18.74	15.64	16.07	16.62	17.06	18.32
8H	4H	15.51	16.00	16.48	16.97	18.22	15.15	15.64	16.12	16.61	17.86
	6H	16.15	16.55	17.14	17.56	18.81	15.79	16.19	16.77	17.20	18.45
	8H	16.37	16.72	17.37	17.72	18.99	16.00	16.35	17.00	17.36	18.62
	12H	16.50	16.82	17.50	17.81	19.13	16.12	16.43	17.12	17.43	18.74
12H	4H	15.50	15.94	16.48	16.93	18.19	15.15	15.59	16.13	16.58	17.83
	6H	16.18	16.53	17.17	17.53	18.80	15.83	16.18	16.82	17.18	18.45
	8H	16.42	16.74	17.42	17.73	19.05	16.07	16.38	17.07	17.37	18.69