

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: P904815

Luminaire Tested: DFN2DIP-TR4F0-110D090US830-FLLONL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P904815
REPORT IS A COMBINATION OF REPORTS P901993 AND P898849
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-TR4F0-110D090US830-FLLONL
Description: 4 foot, Triangle Define Geo, with Direct Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

Summary

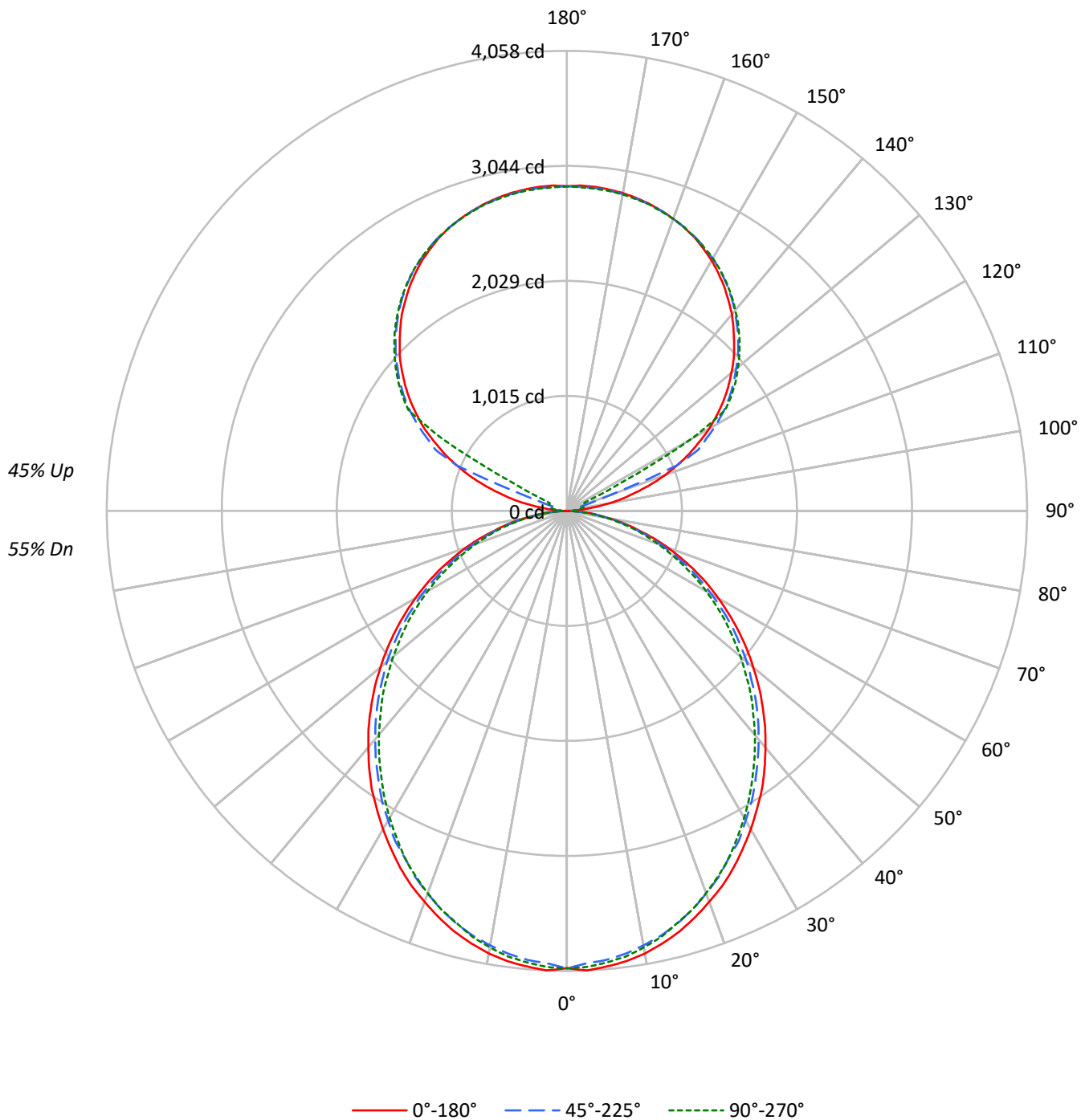
Lumens per Lamp: N/A
Luminaire Lumens: 18662.3 lumens
Efficiency: N/A
Efficacy: 103.5 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.43' x L: 3.96' x H: 0.1')
CIE Type: General Diffuse

Input Watts (W): 180.3
Input Voltage (V):
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.9613
Total Harmonic Distortion (THDi): 0.083
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	108	108	108	108	101	101	101	101	86	86	86	73	73	73	61	61	61
1	99	95	91	87	92	88	85	81	76	73	71	64	62	61	54	52	51
2	90	83	76	71	83	77	71	67	66	62	59	56	53	51	47	45	43
3	82	73	65	59	76	68	61	56	58	53	49	50	46	43	42	39	37
4	75	64	56	50	70	60	53	47	52	46	42	44	40	37	37	34	32
5	69	57	49	43	64	54	46	41	47	41	36	40	35	32	34	30	28
6	64	51	43	37	59	48	41	35	42	36	32	36	32	28	31	27	24
7	59	46	38	33	55	44	36	31	38	32	28	33	28	25	28	24	22
8	55	42	34	29	51	40	33	28	35	29	25	30	25	22	26	22	19
9	51	39	31	26	47	36	29	25	32	26	22	28	23	20	24	20	18
10	48	35	28	23	44	33	27	22	29	24	20	26	21	18	22	19	16

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	3205	3205	3205
5°	3210	3160	3182
10°	3184	3118	3138
15°	3137	3066	3071
20°	3074	2995	3002
25°	3011	2910	2922
30°	2932	2830	2821
35°	2858	2737	2713
40°	2766	2642	2611
45°	2674	2547	2507
50°	2574	2448	2386
55°	2469	2333	2275
60°	2350	2196	2147
65°	2221	2055	1997
70°	2056	1882	1836
75°	1827	1675	1686
80°	1553	1413	1401
85°	1124	959	928

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 2674 cd/sqm

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	379.7	2.0
10°-20°	1068.3	5.7
20°-30°	1570.0	8.4
30°-40°	1823.5	9.8
40°-50°	1821.2	9.8
50°-60°	1588.0	8.5
60°-70°	1173.9	6.3
70°-80°	664.2	3.6
80°-90°	180.3	1.0
90°-100°	94.4	0.5
100°-110°	351.9	1.9
110°-120°	933.3	5.0
120°-130°	1548.0	8.3
130°-140°	1644.3	8.8
140°-150°	1528.2	8.2
150°-160°	1228.6	6.6
160°-170°	791.7	4.2
170°-180°	272.5	1.5
0°-30°	3018.1	16.2
0°-40°	4841.6	25.9
0°-60°	8250.9	44.2
0°-90°	10269.3	55.0
90°-120°	1379.6	7.4
90°-150°	6100.2	32.7
90°-180°	8393.0	45.0
0°-180°	18662.3	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	4034	4034	4034	4034	4034	
5°	4034	4019	3976	4007	4000	383
15°	3840	3817	3767	3782	3763	1082
25°	3476	3445	3379	3386	3379	1599
35°	2999	2960	2898	2874	2855	1873
45°	2440	2413	2355	2312	2297	1883
55°	1847	1823	1777	1730	1711	1651
65°	1245	1222	1183	1148	1129	1231
75°	652	644	624	601	609	696
85°	159	155	152	140	136	177
90°	2	25	41	52	56	17
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°	4034.3	4034.3	4034.3	4034.3	4034.3
2.5°	4057.6	4038.3	3995.5	4034.3	4026.8
5°	4034.3	4019.0	3976.2	4007.0	3999.7
7.5°	4007.0	3984.0	3941.2	3972.5	3964.7
10°	3964.7	3937.5	3891.0	3921.8	3910.3
12.5°	3906.3	3883.2	3836.7	3856.0	3848.2
15°	3840.4	3817.3	3766.7	3782.3	3763.0
17.5°	3758.9	3735.9	3685.2	3704.6	3685.2
20°	3669.6	3646.5	3592.2	3603.7	3588.5
22.5°	3580.7	3545.7	3495.0	3495.0	3487.2
25°	3475.7	3444.9	3379.0	3386.5	3379.0
27.5°	3359.2	3332.1	3281.8	3270.3	3251.0
30°	3243.2	3211.9	3153.8	3142.3	3126.7
32.5°	3118.9	3095.9	3033.7	3010.2	2994.6
35°	2998.7	2960.1	2897.8	2874.4	2855.1
37.5°	2862.9	2827.9	2765.8	2738.6	2719.2
40°	2723.4	2692.1	2630.0	2595.4	2579.7
42.5°	2587.6	2556.3	2494.5	2455.4	2432.4
45°	2440.2	2413.0	2354.6	2312.2	2296.6
47.5°	2296.6	2269.5	2207.2	2164.5	2141.4
50°	2145.1	2125.8	2071.4	2017.1	1997.8
52.5°	1997.8	1970.6	1920.4	1877.5	1850.4
55°	1846.7	1823.3	1776.8	1730.2	1710.9
57.5°	1695.3	1675.9	1625.3	1578.8	1563.1
60°	1543.8	1528.6	1474.2	1431.4	1419.9
62.5°	1396.5	1369.3	1330.6	1291.9	1276.3
65°	1245.4	1221.9	1183.3	1148.3	1129.0
67.5°	1090.2	1070.5	1035.9	1008.8	993.2
70°	946.6	930.9	896.0	868.8	853.6
72.5°	799.3	783.6	764.3	737.2	725.6
75°	651.5	644.1	624.3	601.3	609.2
77.5°	519.8	504.2	496.3	484.8	473.3
80°	388.1	384.0	376.2	364.7	356.8
82.5°	263.8	263.8	260.1	244.5	244.5
85°	158.9	155.1	151.5	139.5	135.8
87.5°	69.9	62.1	54.3	42.8	38.6
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	11.77	12.67	12.68	13.61	14.80	11.33	12.24	12.25	13.17	14.37
	3H	13.43	14.24	14.35	15.18	16.41	12.96	13.77	13.88	14.71	15.93
	4H	14.02	14.79	14.96	15.74	16.97	13.55	14.32	14.49	15.26	16.49
	6H	14.42	15.13	15.37	16.08	17.33	13.95	14.66	14.90	15.61	16.85
	8H	14.53	15.20	15.48	16.17	17.41	14.05	14.73	15.01	15.70	16.94
	12H	14.58	15.22	15.54	16.18	17.45	14.10	14.74	15.06	15.70	16.97
4H	2H	12.23	13.00	13.18	13.95	15.18	11.89	12.66	12.83	13.61	14.84
	3H	14.10	14.75	15.06	15.72	16.97	13.71	14.35	14.67	15.33	16.58
	4H	14.82	15.41	15.78	16.38	17.65	14.41	15.00	15.38	15.97	17.24
	6H	15.34	15.84	16.31	16.84	18.11	14.93	15.43	15.90	16.43	17.70
	8H	15.49	15.96	16.47	16.95	18.23	15.08	15.55	16.05	16.54	17.82
	12H	15.56	15.99	16.56	16.99	18.28	15.14	15.57	16.14	16.57	17.86
8H	4H	15.02	15.49	16.00	16.48	17.76	14.66	15.13	15.64	16.12	17.40
	6H	15.65	16.04	16.66	17.07	18.35	15.29	15.68	16.29	16.71	17.99
	8H	15.87	16.22	16.89	17.24	18.54	15.51	15.85	16.52	16.87	18.17
	12H	16.01	16.31	17.02	17.32	18.67	15.62	15.93	16.64	16.94	18.28
12H	4H	15.01	15.43	16.01	16.44	17.73	14.66	15.08	15.65	16.09	17.38
	6H	15.68	16.03	16.70	17.05	18.35	15.33	15.68	16.34	16.69	17.99
	8H	15.93	16.23	16.94	17.24	18.59	15.57	15.87	16.59	16.89	18.23