

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: P923235

Luminaire Tested: DFN2DIP-SQ4F0-110D110US940-RLLONL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P923235
REPORT IS A COMBINATION OF REPORTS P901680 AND P898471
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-SQ4F0-110D110US940-RLLONL
Description: 4 foot, Square Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

Summary

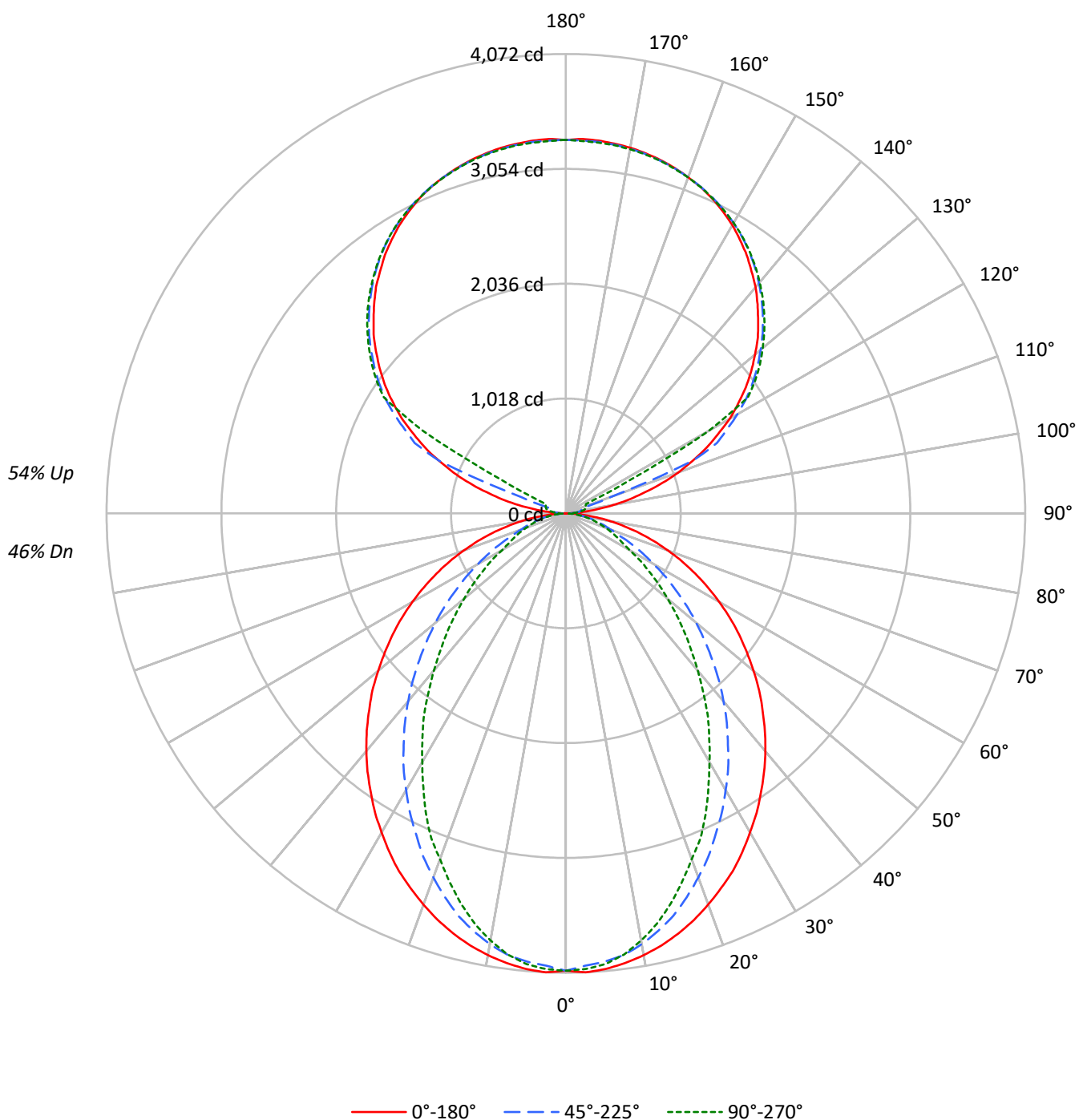
Lumens per Lamp: N/A
Luminaire Lumens: 18048.2 lumens
Efficiency: N/A
Efficacy: 96.1 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16
Luminous Opening: Rectangular w/ Sides (W: 3.92' x L: 3.92' x H: 0.1')
CIE Type: General Diffuse

Input Watts (W): 187.9
Input Voltage (V):
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.9951
Total Harmonic Distortion (THDi): 0.07
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	50	30	10
RCR																				
0	106	106	106	106	98	98	98	98	81	81	81	66	66	66	53	53	53			46
1	97	93	90	86	89	86	83	80	72	70	68	59	58	56	47	46	45			40
2	89	82	76	71	82	76	70	66	63	60	57	52	50	48	42	40	39			34
3	81	72	65	60	75	67	61	56	56	52	48	47	43	41	38	35	34			29
4	75	64	57	51	68	60	53	48	50	45	41	42	38	35	34	31	29			26
5	69	58	50	44	63	53	46	41	45	40	36	38	34	31	31	28	26			23
6	63	52	44	38	58	48	41	36	41	36	32	34	30	27	28	25	23			20
7	59	47	39	34	54	44	37	32	37	32	28	31	27	24	26	23	21			18
8	55	43	35	30	50	40	33	28	34	29	25	29	25	22	24	21	19			16
9	51	39	32	27	47	36	30	25	31	26	22	27	23	20	22	19	17			15
10	48	36	29	24	44	33	27	23	29	24	20	25	21	18	20	18	15			13

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	2845	2845	2845
5°	2849	2800	2818
10°	2821	2746	2727
15°	2782	2655	2586
20°	2731	2531	2413
25°	2678	2391	2246
30°	2607	2248	2033
35°	2538	2094	1846
40°	2468	1934	1632
45°	2386	1757	1438
50°	2301	1578	1248
55°	2213	1387	1065
60°	2110	1187	878
65°	1993	984	791
70°	1850	794	717
75°	1671	701	654
80°	1411	590	570
85°	983	397	434

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 2386 cd/sqm

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	379.9	2.1
10°-20°	1043.0	5.8
20°-30°	1464.4	8.1
30°-40°	1596.2	8.8
40°-50°	1467.1	8.1
50°-60°	1152.2	6.4
60°-70°	750.0	4.2
70°-80°	386.0	2.1
80°-90°	104.4	0.6
90°-100°	109.2	0.6
100°-110°	406.9	2.3
110°-120°	1079.2	6.0
120°-130°	1789.9	9.9
130°-140°	1901.3	10.5
140°-150°	1767.1	9.8
150°-160°	1420.7	7.9
160°-170°	915.4	5.1
170°-180°	315.1	1.7
0°-30°	2887.3	16.0
0°-40°	4483.6	24.8
0°-60°	7102.9	39.4
0°-90°	8343.3	46.2
90°-120°	1595.3	8.8
90°-150°	7053.7	39.1
90°-180°	9705.0	53.8
0°-180°	18048.2	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	4054	4054	4054	4054	4054	
5°	4054	4036	3988	4021	4010	384
15°	3856	3815	3691	3621	3584	1087
25°	3500	3382	3140	2990	2935	1610
35°	3016	2829	2506	2275	2194	1888
45°	2466	2220	1834	1574	1486	1904
55°	1875	1588	1192	972	903	1675
65°	1266	968	638	514	502	1255
75°	675	418	294	268	264	714
85°	158	81	70	70	70	181
90°	2	29	48	60	65	17
95°	156	76	93	106	103	184
105°	728	800	146	172	182	778
115°	1377	1418	1478	369	196	1356
125°	1947	1979	2024	2041	2048	1737
135°	2410	2448	2470	2494	2489	1862
145°	2796	2793	2834	2850	2838	1748
155°	3078	3057	3085	3100	3080	1418
165°	3243	3229	3236	3253	3236	916
175°	3317	3301	3306	3322	3298	316
180°	3310	3310	3310	3310	3310	



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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	4054.0	4054.0	4054.0	4054.0	4054.0
2.5°	4072.3	4054.0	4013.5	4050.5	4043.1
5°	4054.0	4035.7	3987.8	4020.9	4010.0
7.5°	4020.9	3999.1	3947.7	3962.1	3943.8
10°	3976.9	3951.2	3878.0	3866.7	3845.0
12.5°	3922.0	3888.9	3789.7	3767.8	3727.3
15°	3855.8	3815.4	3690.8	3621.1	3584.5
17.5°	3778.8	3720.0	3565.9	3485.2	3426.5
20°	3690.8	3617.2	3433.9	3342.4	3261.4
22.5°	3595.5	3510.9	3298.1	3173.5	3118.6
25°	3500.1	3382.5	3140.4	2990.2	2934.9
27.5°	3386.4	3261.4	2993.7	2821.2	2736.7
30°	3265.4	3125.6	2832.2	2645.3	2546.0
32.5°	3147.8	2978.8	2678.3	2458.1	2366.2
35°	3015.9	2828.6	2506.0	2274.8	2193.8
37.5°	2887.4	2685.4	2344.4	2091.0	1999.6
40°	2751.6	2531.7	2175.5	1915.0	1819.7
42.5°	2612.2	2377.5	2007.0	1735.3	1643.8
45°	2465.5	2219.5	1834.5	1573.7	1485.8
47.5°	2326.1	2065.7	1669.5	1408.6	1328.1
50°	2171.9	1911.6	1508.0	1254.5	1177.9
52.5°	2021.3	1746.1	1353.8	1111.7	1042.0
55°	1874.6	1588.5	1192.2	972.3	902.7
57.5°	1724.4	1430.8	1049.4	843.9	785.1
60°	1570.2	1276.8	898.8	711.9	653.2
62.5°	1420.0	1126.5	770.3	594.4	565.2
65°	1265.8	968.4	638.4	513.8	502.5
67.5°	1119.1	821.7	513.8	451.1	440.2
70°	964.9	678.9	425.4	388.9	374.1
72.5°	818.1	546.5	355.8	326.5	319.1
75°	674.9	418.0	293.5	267.8	264.3
77.5°	532.1	297.0	231.2	216.4	209.0
80°	399.8	212.9	175.9	161.6	161.6
82.5°	278.7	143.2	121.1	113.7	113.7
85°	157.7	80.6	69.6	69.6	69.6
87.5°	58.8	29.2	29.2	25.7	25.7
90°	2.3	28.7	47.8	60.0	64.6
92.5°	60.0	50.4	57.4	62.3	64.6
95°	155.6	76.5	93.3	105.5	103.0
97.5°	280.2	83.9	122.0	129.4	131.7
100°	424.1	95.9	136.5	155.6	160.4
102.5°	581.9	577.4	141.3	167.6	175.0
105°	728.2	800.1	146.2	172.4	182.1
107.5°	898.3	958.0	151.1	177.2	186.9
110°	1061.2	1111.3	419.3	179.8	189.1

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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	1214.6	1257.5	1216.8	184.3	191.7
115°	1377.2	1417.9	1478.0	368.9	196.5
117.5°	1518.7	1566.5	1607.4	1264.6	637.1
120°	1676.8	1712.6	1755.9	1784.6	1461.2
122.5°	1810.8	1849.1	1897.2	1911.5	1914.1
125°	1947.3	1978.6	2024.1	2040.9	2048.0
127.5°	2071.9	2105.4	2141.5	2165.4	2167.7
130°	2189.3	2227.8	2253.9	2280.4	2278.1
132.5°	2309.1	2340.4	2366.6	2388.2	2385.9
135°	2409.8	2448.2	2469.5	2493.8	2488.9
137.5°	2515.1	2543.8	2567.9	2591.8	2584.7
140°	2618.1	2637.3	2663.5	2685.1	2673.2
142.5°	2704.5	2721.2	2752.3	2771.3	2759.4
145°	2795.5	2792.9	2833.6	2850.4	2838.5
147.5°	2874.3	2867.2	2907.9	2919.8	2910.5
150°	2951.1	2934.4	2972.7	2987.0	2975.0
152.5°	3015.7	2996.6	3032.4	3047.0	3030.2
155°	3078.0	3056.6	3085.3	3099.6	3080.5
157.5°	3128.3	3109.2	3130.9	3147.6	3128.3
160°	3171.5	3157.0	3171.5	3185.7	3169.0
162.5°	3209.6	3195.4	3207.4	3224.2	3202.6
165°	3243.2	3229.0	3236.1	3252.9	3236.1
167.5°	3269.6	3255.2	3262.6	3279.4	3257.8
170°	3291.3	3276.8	3281.6	3298.4	3276.8
172.5°	3305.5	3291.3	3296.1	3312.9	3291.3
175°	3317.4	3300.7	3305.5	3322.3	3298.4
177.5°	3322.3	3305.5	3308.1	3324.8	3303.3
180°	3310.4	3310.4	3310.4	3310.4	3310.4

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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	10.43	11.23	11.42	12.23	13.56	6.39	7.19	7.38	8.19	9.52
	3H	12.11	12.82	13.11	13.84	15.18	7.58	8.29	8.58	9.30	10.65
	4H	12.72	13.40	13.74	14.41	15.77	8.03	8.70	9.04	9.72	11.07
	6H	13.14	13.77	14.17	14.78	16.15	8.35	8.97	9.37	9.99	11.36
	8H	13.27	13.86	14.30	14.90	16.26	8.44	9.03	9.47	10.06	11.43
	12H	13.33	13.90	14.37	14.92	16.31	8.48	9.04	9.52	10.07	11.46
4H	2H	10.44	11.12	11.47	12.13	13.49	6.98	7.66	8.01	8.68	10.03
	3H	12.27	12.84	13.31	13.88	15.25	8.33	8.89	9.37	9.94	11.31
	4H	12.97	13.48	14.01	14.52	15.91	8.88	9.39	9.92	10.43	11.82
	6H	13.49	13.93	14.54	14.99	16.37	9.30	9.74	10.35	10.80	12.19
	8H	13.66	14.08	14.71	15.13	16.53	9.43	9.84	10.48	10.89	12.29
	12H	13.76	14.13	14.83	15.20	16.60	9.49	9.86	10.56	10.93	12.34
8H	4H	12.93	13.35	13.99	14.40	15.80	9.16	9.57	10.21	10.62	12.03
	6H	13.50	13.84	14.58	14.94	16.34	9.68	10.02	10.75	11.11	12.51
	8H	13.72	14.02	14.81	15.10	16.52	9.87	10.17	10.95	11.25	12.67
	12H	13.86	14.13	14.95	15.20	16.66	9.99	10.25	11.07	11.32	12.78
12H	4H	12.89	13.26	13.95	14.32	15.73	9.16	9.54	10.23	10.60	12.01
	6H	13.48	13.78	14.56	14.86	16.27	9.73	10.03	10.81	11.10	12.52
	8H	13.70	13.96	14.79	15.04	16.50	9.94	10.20	11.02	11.27	12.73

END OF REPORT