

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: P909643

Luminaire Tested: DFN2DIP-SQ4F0-120D160US840-RLLONL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P909643
REPORT IS A COMBINATION OF REPORTS P901736 AND P898471
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-SQ4F0-120D160US840-RLLONL
Description: 4 foot, Square Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

Summary

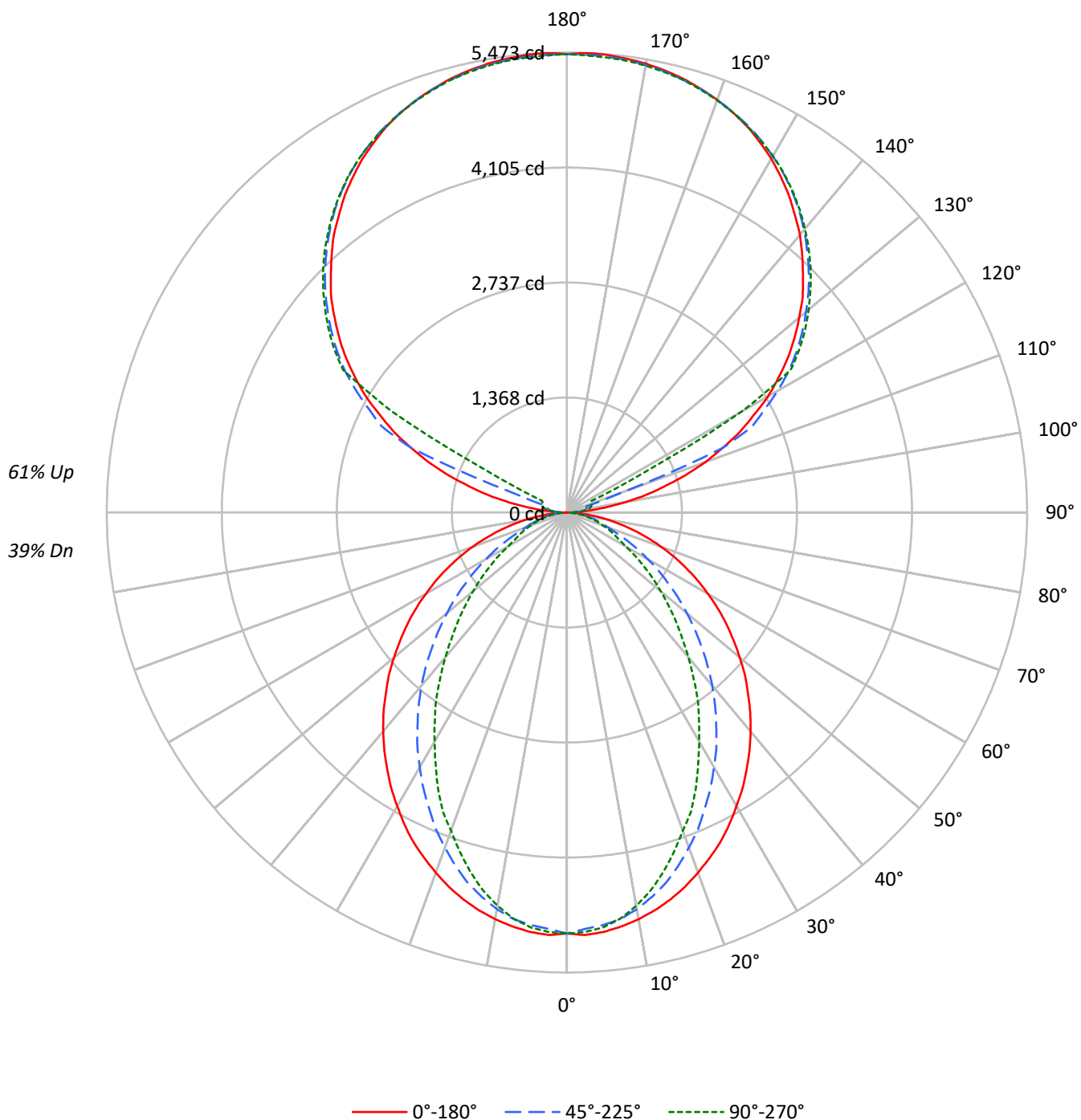
Lumens per Lamp: N/A
Luminaire Lumens: 26296.9 lumens
Efficiency: N/A
Efficacy: 109.7 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16
Luminous Opening: Rectangular w/ Sides (W: 3.92' x L: 3.92' x H: 0.1')
CIE Type: Semi-Indirect

Input Watts (W): 239.7
Input Voltage (V):
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.9933
Total Harmonic Distortion (THDi): 0.066
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	105	105	105	105	95	95	95	95	77	77	77	61	61	61	46	46	46
1	96	92	88	85	87	83	80	78	68	66	64	54	53	52	41	41	40
2	87	80	75	70	79	73	68	64	60	57	54	48	46	44	37	35	34
3	80	71	64	58	73	65	59	54	53	49	46	43	40	37	33	31	29
4	73	63	55	50	67	58	51	46	48	43	39	38	35	32	30	27	26
5	67	56	48	43	61	52	45	40	43	38	34	35	31	28	27	25	23
6	62	51	43	37	56	46	40	35	39	34	30	31	28	25	25	22	20
7	57	46	38	33	52	42	35	31	35	30	26	29	25	22	23	20	18
8	53	42	34	29	49	38	32	27	32	27	23	26	22	20	21	18	16
9	50	38	31	26	45	35	29	24	29	24	21	24	20	18	19	17	15
10	46	35	28	23	42	32	26	22	27	22	19	22	19	16	18	15	13

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	3514	3514	3514
5°	3520	3459	3482
10°	3485	3392	3369
15°	3437	3281	3195
20°	3373	3127	2981
25°	3308	2954	2774
30°	3221	2777	2512
35°	3136	2587	2281
40°	3048	2390	2016
45°	2947	2171	1776
50°	2843	1950	1542
55°	2734	1714	1316
60°	2607	1466	1085
65°	2462	1215	977
70°	2285	981	886
75°	2064	866	808
80°	1743	729	704
85°	1214	490	536

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 2947 cd/sqm

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	469.4	1.8
10°-20°	1288.6	4.9
20°-30°	1809.2	6.9
30°-40°	1972.1	7.5
40°-50°	1812.6	6.9
50°-60°	1423.5	5.4
60°-70°	926.6	3.5
70°-80°	476.9	1.8
80°-90°	131.3	0.5
90°-100°	179.8	0.7
100°-110°	670.3	2.5
110°-120°	1777.8	6.8
120°-130°	2948.5	11.2
130°-140°	3132.1	11.9
140°-150°	2910.9	11.1
150°-160°	2340.3	8.9
160°-170°	1508.0	5.7
170°-180°	519.0	2.0
0°-30°	3567.2	13.6
0°-40°	5539.3	21.1
0°-60°	8775.3	33.4
0°-90°	10310.2	39.2
90°-120°	2627.9	10.0
90°-150°	11619.4	44.2
90°-180°	15987.0	60.8
0°-180°	26296.9	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°	4	47	79	99	106	25
95°	256	126	154	174	170	304
105°	1200	1318	241	284	300	1282
115°	2269	2336	2435	608	324	2234
125°	3208	3259	3334	3362	3374	2861
135°	3970	4033	4068	4108	4100	3066
145°	4605	4601	4668	4695	4676	2880
155°	5070	5035	5082	5106	5074	2336
165°	5342	5319	5331	5358	5331	1509
175°	5465	5437	5445	5473	5433	520
180°	5453	5453	5453	5453	5453	

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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°	3.7	47.4	78.7	98.9	106.3
92.5°	98.9	82.9	94.6	102.6	106.3
95°	256.3	126.0	153.7	173.8	169.7
97.5°	461.5	138.3	201.0	213.2	216.9
100°	698.6	157.9	224.9	256.3	264.3
102.5°	958.7	951.2	232.9	276.0	288.1
105°	1199.5	1318.1	240.9	284.0	299.8
107.5°	1479.7	1578.1	248.8	292.0	307.8
110°	1748.2	1830.7	690.6	296.1	311.5

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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	2000.7	2071.5	2004.5	303.7	315.8
115°	2268.8	2335.7	2434.6	607.7	323.8
117.5°	2501.6	2580.3	2647.9	2083.3	1049.6
120°	2762.2	2821.2	2892.4	2939.7	2407.0
122.5°	2982.8	3046.1	3125.2	3148.7	3152.9
125°	3207.7	3259.2	3334.3	3361.9	3373.7
127.5°	3412.9	3468.3	3527.8	3567.1	3570.9
130°	3606.5	3669.8	3712.9	3756.4	3752.7
132.5°	3803.8	3855.3	3898.4	3934.0	3930.3
135°	3969.6	4032.9	4068.0	4107.8	4099.9
137.5°	4143.0	4190.3	4230.1	4269.5	4257.8
140°	4312.6	4344.4	4387.6	4423.2	4403.5
142.5°	4455.0	4482.7	4533.8	4565.2	4545.5
145°	4605.0	4600.7	4667.8	4695.4	4675.8
147.5°	4734.8	4723.0	4790.1	4809.8	4794.2
150°	4861.3	4833.6	4896.9	4920.4	4900.7
152.5°	4967.6	4936.2	4995.3	5019.2	4991.6
155°	5070.2	5035.1	5082.5	5105.9	5074.5
157.5°	5153.2	5121.8	5157.4	5185.1	5153.2
160°	5224.4	5200.5	5224.4	5247.9	5220.2
162.5°	5287.3	5263.8	5283.4	5311.1	5275.5
165°	5342.5	5319.1	5330.8	5358.4	5330.8
167.5°	5386.1	5362.2	5374.4	5402.0	5366.4
170°	5421.7	5397.8	5405.7	5433.4	5397.8
172.5°	5445.1	5421.7	5429.6	5457.3	5421.7
175°	5464.8	5437.1	5445.1	5472.8	5433.4
177.5°	5472.8	5445.1	5449.3	5477.0	5441.4
180°	5453.1	5453.1	5453.1	5453.1	5453.1



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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	11.18	11.48	12.23	13.65	6.39	7.14	7.44	8.19	9.61
	3H	12.10	12.77	13.16	13.83	15.27	7.57	8.24	8.63	9.30	10.74
	4H	12.71	13.35	13.78	14.41	15.85	8.02	8.65	9.09	9.71	11.16
	6H	13.13	13.72	14.21	14.78	16.24	8.34	8.92	9.42	9.99	11.44
	8H	13.26	13.81	14.34	14.90	16.35	8.42	8.98	9.51	10.06	11.51
	12H	13.32	13.85	14.41	14.92	16.40	8.47	8.99	9.56	10.07	11.54
4H	2H	10.44	11.07	11.51	12.13	13.58	6.98	7.61	8.06	8.67	10.12
	3H	12.26	12.79	13.35	13.88	15.34	8.32	8.85	9.41	9.94	11.40
	4H	12.95	13.44	14.05	14.52	16.00	8.87	9.35	9.96	10.43	11.91
	6H	13.47	13.88	14.57	14.99	16.46	9.28	9.70	10.38	10.80	12.27
	8H	13.65	14.03	14.74	15.13	16.62	9.41	9.80	10.51	10.89	12.38
	12H	13.74	14.09	14.86	15.20	16.69	9.47	9.82	10.59	10.93	12.42
8H	4H	12.92	13.30	14.02	14.40	15.89	9.14	9.53	10.24	10.62	12.11
	6H	13.48	13.80	14.61	14.94	16.43	9.66	9.98	10.78	11.12	12.60
	8H	13.70	13.98	14.83	15.10	16.61	9.85	10.13	10.98	11.25	12.75
	12H	13.84	14.09	14.97	15.20	16.75	9.97	10.21	11.10	11.33	12.87
12H	4H	12.87	13.22	13.98	14.32	15.82	9.14	9.49	10.26	10.60	12.10
	6H	13.46	13.74	14.59	14.86	16.36	9.71	9.99	10.84	11.11	12.61
	8H	13.68	13.93	14.81	15.04	16.58	9.92	10.16	11.05	11.28	12.82