

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: P912371

Luminaire Tested: DFN2DIP-SQ4F0-120D160US850-RLLONL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P912371
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-SQ4F0-120D160US850-RLLONL
Description: 4 foot, Square Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

Summary

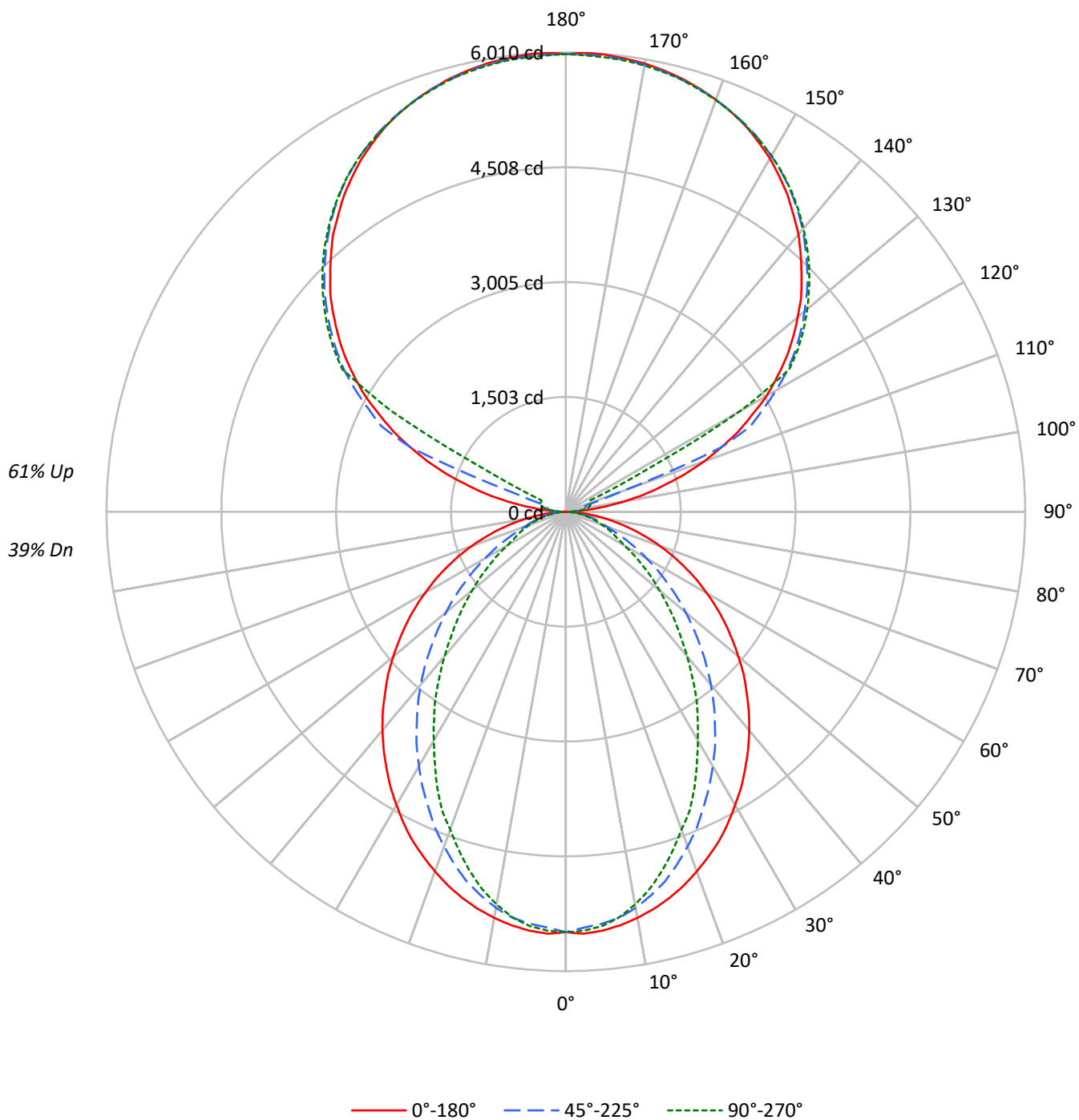
Lumens per Lamp: N/A
Luminaire Lumens: 28878.4 lumens
Efficiency: N/A
Efficacy: 120.5 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16
Luminous Opening: Rectangular w/ Sides (W: 3.92' x L: 3.92' x H: 0.1')
CIE Type: Semi-Indirect

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°	3859	3859	3859
5°	3865	3799	3824
10°	3827	3725	3700
15°	3774	3603	3509
20°	3705	3434	3274
25°	3633	3244	3047
30°	3537	3050	2758
35°	3443	2841	2505
40°	3348	2624	2214
45°	3237	2384	1950
50°	3122	2141	1693
55°	3002	1882	1446
60°	2863	1610	1191
65°	2703	1335	1073
70°	2510	1077	973
75°	2267	951	887
80°	1915	801	773
85°	1333	539	589

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 3237 cd/sqm

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	515.5	1.8
10°-20°	1415.1	4.9
20°-30°	1986.8	6.9
30°-40°	2165.7	7.5
40°-50°	1990.5	6.9
50°-60°	1563.2	5.4
60°-70°	1017.5	3.5
70°-80°	523.8	1.8
80°-90°	144.2	0.5
90°-100°	197.5	0.7
100°-110°	736.1	2.5
110°-120°	1952.3	6.8
120°-130°	3238.0	11.2
130°-140°	3439.5	11.9
140°-150°	3196.6	11.1
150°-160°	2570.0	8.9
160°-170°	1656.0	5.7
170°-180°	570.0	2.0
0°-30°	3917.3	13.6
0°-40°	6083.0	21.1
0°-60°	9636.8	33.4
0°-90°	11322.3	39.2
90°-120°	2885.9	10.0
90°-150°	12760.0	44.2
90°-180°	17556.0	60.8
0°-180°	28878.4	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	5500	5500	5500	5500	5500	
5°	5500	5475	5410	5455	5440	522
15°	5231	5176	5008	4913	4863	1474
25°	4749	4589	4261	4057	3982	2184
35°	4092	3838	3400	3086	2976	2561
45°	3345	3011	2489	2135	2016	2583
55°	2543	2155	1618	1319	1225	2273
65°	1717	1314	866	697	682	1703
75°	916	567	398	363	358	969
85°	214	109	94	94	94	246
90°	4	52	86	109	117	27
95°	282	138	169	191	186	333
105°	1317	1448	264	312	329	1407
115°	2492	2565	2674	667	356	2453
125°	3523	3579	3662	3692	3705	3142
135°	4359	4429	4467	4511	4502	3367
145°	5057	5052	5126	5156	5135	3163
155°	5568	5529	5581	5607	5573	2566
165°	5867	5841	5854	5884	5854	1658
175°	6001	5971	5980	6010	5967	571
180°	5988	5988	5988	5988	5988	

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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	5500.2	5500.2	5500.2	5500.2	5500.2
2.5°	5525.0	5500.2	5445.3	5495.4	5485.3
5°	5500.2	5475.4	5410.4	5455.3	5440.5
7.5°	5455.3	5425.7	5356.0	5375.5	5350.7
10°	5395.6	5360.8	5261.4	5246.1	5216.6
12.5°	5321.1	5276.3	5141.5	5112.0	5057.2
15°	5231.4	5176.5	5007.5	4912.9	4863.3
17.5°	5126.8	5047.1	4837.9	4728.7	4648.9
20°	5007.5	4907.7	4658.9	4534.8	4424.9
22.5°	4878.0	4763.5	4474.6	4305.6	4231.2
25°	4748.7	4589.2	4260.7	4056.8	3981.9
27.5°	4594.5	4424.9	4061.6	3827.7	3713.0
30°	4430.2	4240.7	3842.5	3588.9	3454.3
32.5°	4270.8	4041.5	3633.9	3335.0	3210.3
35°	4091.8	3837.7	3399.9	3086.2	2976.3
37.5°	3917.4	3643.4	3180.7	2836.9	2712.8
40°	3733.1	3434.8	2951.6	2598.3	2468.9
42.5°	3544.0	3225.6	2722.9	2354.3	2230.2
45°	3345.0	3011.3	2488.9	2135.2	2015.7
47.5°	3155.9	2802.7	2265.0	1911.3	1801.9
50°	2946.8	2593.5	2045.9	1702.1	1598.1
52.5°	2742.4	2369.0	1836.7	1508.2	1413.8
55°	2543.4	2155.2	1617.6	1319.2	1224.7
57.5°	2339.4	1941.3	1423.7	1144.9	1065.2
60°	2130.4	1732.1	1219.3	965.9	886.2
62.5°	1926.6	1528.3	1045.1	806.5	766.8
65°	1717.4	1313.9	866.1	697.1	681.8
67.5°	1518.3	1114.8	697.1	612.1	597.3
70°	1309.2	921.0	577.2	527.6	507.5
72.5°	1110.1	741.5	482.6	443.0	433.1
75°	915.7	567.1	398.2	363.3	358.5
77.5°	722.0	402.9	313.7	293.7	283.6
80°	542.4	288.9	238.7	219.1	219.1
82.5°	378.2	194.3	164.2	154.2	154.2
85°	213.9	109.3	94.5	94.5	94.5
87.5°	79.7	39.6	39.6	34.8	34.8
90°	4.1	52.0	86.4	108.6	116.8
92.5°	108.6	91.0	103.9	112.7	116.8
95°	281.5	138.4	168.8	190.9	186.3
97.5°	506.8	151.8	220.7	234.1	238.2
100°	767.2	173.4	247.0	281.5	290.2
102.5°	1052.8	1044.6	255.7	303.1	316.4
105°	1317.3	1447.5	264.5	311.9	329.3
107.5°	1624.9	1733.0	273.3	320.6	338.0
110°	1919.8	2010.4	758.4	325.2	342.1

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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	2197.2	2274.9	2201.3	333.5	346.8
115°	2491.5	2565.0	2673.6	667.4	355.5
117.5°	2747.2	2833.6	2907.8	2287.8	1152.6
120°	3033.3	3098.1	3176.3	3228.3	2643.3
122.5°	3275.7	3345.1	3432.0	3457.8	3462.4
125°	3522.6	3579.2	3661.6	3692.0	3704.8
127.5°	3748.0	3808.7	3874.1	3917.3	3921.4
130°	3960.6	4030.0	4077.3	4125.1	4121.0
132.5°	4177.2	4233.7	4281.1	4320.2	4316.1
135°	4359.3	4428.8	4467.4	4511.1	4502.3
137.5°	4549.7	4601.7	4645.4	4688.6	4675.8
140°	4736.0	4770.9	4818.3	4857.4	4835.8
142.5°	4892.4	4922.7	4978.9	5013.3	4991.7
145°	5057.0	5052.4	5126.0	5156.3	5134.8
147.5°	5199.5	5186.7	5260.3	5281.9	5264.9
150°	5338.5	5308.1	5377.7	5403.4	5381.8
152.5°	5455.3	5420.8	5485.7	5512.0	5481.6
155°	5568.0	5529.4	5581.4	5607.1	5572.6
157.5°	5659.1	5624.6	5663.7	5694.0	5659.1
160°	5737.3	5711.0	5737.3	5763.0	5732.6
162.5°	5806.3	5780.6	5802.1	5832.5	5793.4
165°	5866.9	5841.2	5854.1	5884.5	5854.1
167.5°	5914.9	5888.6	5902.0	5932.3	5893.2
170°	5953.9	5927.7	5936.4	5966.8	5927.7
172.5°	5979.6	5953.9	5962.6	5993.0	5953.9
175°	6001.2	5970.9	5979.6	6010.0	5966.8
177.5°	6010.0	5979.6	5984.3	6014.7	5975.5
180°	5988.4	5988.4	5988.4	5988.4	5988.4

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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	10.75	11.50	11.80	12.55	13.97	6.71	7.46	7.76	8.51	9.93
	3H	12.43	13.10	13.49	14.16	15.60	7.90	8.57	8.96	9.63	11.07
	4H	13.04	13.67	14.11	14.73	16.18	8.34	8.98	9.42	10.04	11.49
	6H	13.46	14.04	14.54	15.11	16.56	8.66	9.24	9.74	10.31	11.77
	8H	13.58	14.14	14.67	15.22	16.67	8.75	9.30	9.84	10.39	11.84
	12H	13.65	14.17	14.73	15.25	16.72	8.79	9.32	9.88	10.39	11.87
4H	2H	10.76	11.40	11.84	12.46	13.90	7.30	7.94	8.38	9.00	10.44
	3H	12.59	13.12	13.67	14.21	15.66	8.65	9.17	9.73	10.26	11.72
	4H	13.28	13.76	14.37	14.84	16.32	9.19	9.67	10.28	10.75	12.23
	6H	13.80	14.21	14.89	15.31	16.79	9.61	10.02	10.71	11.12	12.60
	8H	13.97	14.36	15.07	15.45	16.94	9.73	10.12	10.83	11.22	12.70
	12H	14.07	14.42	15.18	15.52	17.02	9.80	10.15	10.91	11.25	12.75
8H	4H	13.24	13.63	14.34	14.72	16.21	9.47	9.85	10.57	10.95	12.44
	6H	13.81	14.13	14.93	15.27	16.75	9.98	10.30	11.10	11.44	12.93
	8H	14.03	14.31	15.16	15.43	16.93	10.18	10.46	11.30	11.57	13.08
	12H	14.17	14.41	15.30	15.53	17.07	10.29	10.54	11.42	11.65	13.20
12H	4H	13.19	13.54	14.31	14.65	16.14	9.47	9.82	10.58	10.93	12.42
	6H	13.79	14.07	14.91	15.18	16.69	10.03	10.31	11.16	11.43	12.94
	8H	14.01	14.25	15.14	15.37	16.91	10.24	10.49	11.37	11.60	13.15