

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: P912297

Luminaire Tested: DFN2DIP-SQ4F0-100D160US850-FLLONL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P912297
REPORT IS A COMBINATION OF REPORTS P901731 AND P898471
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-SQ4F0-100D160US850-FLLONL
Description: 4 foot, Square Define Geo, with Direct Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

Summary

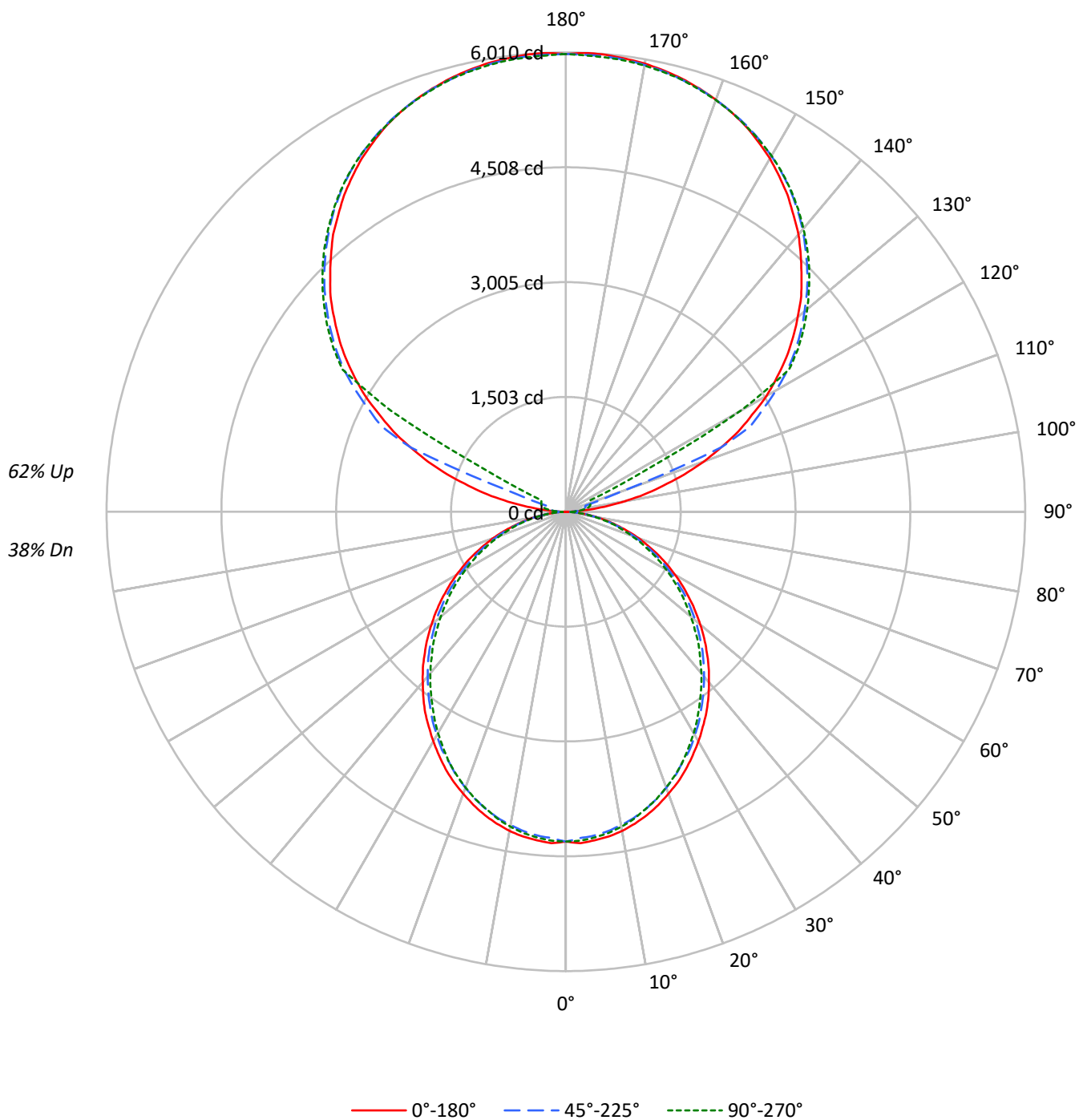
Lumens per Lamp: N/A
Luminaire Lumens: 28545.7 lumens
Efficiency: N/A
Efficacy: 132.9 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.92' x L: 3.92' x H: 0.1')
CIE Type: Semi-Indirect

Input Watts (W): 214.8
Input Voltage (V):
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.9968
Total Harmonic Distortion (THDi): 0.064
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	104	104	104	104	95	95	95	95	77	77	77	61	61	61	46	46	46
1	95	91	87	84	86	83	80	77	67	65	63	53	52	50	40	39	38
2	87	79	73	68	78	72	67	63	59	55	52	47	44	42	35	34	32
3	79	70	63	57	71	64	57	52	52	48	44	41	38	36	31	29	28
4	72	62	54	48	65	56	50	44	46	41	37	37	33	30	28	26	24
5	66	55	47	41	60	50	43	38	41	36	32	33	29	26	25	23	21
6	61	49	41	36	55	45	38	33	37	32	28	30	26	23	23	20	18
7	56	44	36	31	51	41	34	29	34	28	25	27	23	20	21	18	16
8	52	40	33	27	47	37	30	25	31	25	22	25	21	18	19	16	14
9	49	37	29	24	44	34	27	23	28	23	19	23	19	16	18	15	13
10	45	33	26	22	41	31	25	20	26	21	17	21	17	15	16	14	12

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	3028	3028	3028
5°	3033	2986	3007
10°	3008	2947	2967
15°	2964	2899	2904
20°	2904	2832	2840
25°	2845	2752	2765
30°	2770	2677	2670
35°	2699	2590	2570
40°	2612	2501	2475
45°	2526	2412	2377
50°	2431	2319	2264
55°	2332	2211	2160
60°	2219	2083	2041
65°	2097	1950	1901
70°	1941	1789	1750
75°	1725	1595	1613
80°	1465	1349	1347
85°	1059	923	906

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 90°

Vertical Angle: 90°

Luminance: 3210 cd/sqm

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	406.1	1.4
10°-20°	1142.7	4.0
20°-30°	1679.4	5.9
30°-40°	1950.5	6.8
40°-50°	1948.1	6.8
50°-60°	1698.7	6.0
60°-70°	1255.7	4.4
70°-80°	710.4	2.5
80°-90°	198.0	0.7
90°-100°	197.5	0.7
100°-110°	736.1	2.6
110°-120°	1952.3	6.8
120°-130°	3238.0	11.3
130°-140°	3439.5	12.0
140°-150°	3196.6	11.2
150°-160°	2570.0	9.0
160°-170°	1656.0	5.8
170°-180°	570.0	2.0
0°-30°	3228.3	11.3
0°-40°	5178.7	18.1
0°-60°	8825.5	30.9
0°-90°	10989.6	38.5
90°-120°	2885.9	10.1
90°-150°	12760.0	44.7
90°-180°	17556.0	61.5
0°-180°	28545.7	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	4315	4315	4315	4315	4315	
5°	4315	4299	4253	4286	4278	410
15°	4108	4083	4029	4046	4025	1157
25°	3718	3685	3614	3622	3614	1711
35°	3208	3166	3100	3075	3054	2003
45°	2610	2581	2518	2473	2456	2014
55°	1975	1950	1900	1851	1830	1766
65°	1332	1307	1266	1228	1208	1317
75°	697	689	668	643	652	744
85°	170	166	162	149	145	190
90°	4	52	86	109	117	26
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°	4315.2	4315.2	4315.2	4315.2	4315.2
2.5°	4340.3	4319.6	4273.8	4315.2	4307.2
5°	4315.2	4298.9	4253.1	4286.2	4278.2
7.5°	4286.2	4261.4	4215.6	4249.1	4240.8
10°	4240.8	4211.8	4162.0	4195.0	4182.7
12.5°	4178.3	4153.6	4103.9	4124.6	4116.2
15°	4107.8	4083.2	4029.0	4045.7	4025.1
17.5°	4020.7	3996.1	3941.8	3962.6	3941.8
20°	3925.1	3900.5	3842.4	3854.7	3838.4
22.5°	3830.0	3792.7	3738.4	3738.4	3730.1
25°	3717.8	3684.8	3614.3	3622.2	3614.3
27.5°	3593.2	3564.1	3510.4	3498.1	3477.4
30°	3469.1	3435.6	3373.5	3361.2	3344.4
32.5°	3336.1	3311.5	3244.9	3219.9	3203.1
35°	3207.6	3166.2	3099.7	3074.6	3053.9
37.5°	3062.3	3024.8	2958.4	2929.3	2908.6
40°	2913.0	2879.5	2813.1	2776.2	2759.4
42.5°	2767.7	2734.2	2668.3	2626.4	2601.8
45°	2610.1	2581.1	2518.5	2473.2	2456.5
47.5°	2456.5	2427.5	2361.0	2315.1	2290.5
50°	2294.5	2273.8	2215.7	2157.6	2136.9
52.5°	2136.9	2107.9	2054.1	2008.4	1979.3
55°	1975.4	1950.3	1900.5	1850.7	1830.1
57.5°	1813.3	1792.6	1738.5	1688.8	1672.0
60°	1651.3	1635.0	1576.9	1531.1	1518.8
62.5°	1493.7	1464.7	1423.3	1381.9	1365.2
65°	1332.1	1307.1	1265.7	1228.2	1207.6
67.5°	1166.2	1145.0	1108.1	1079.1	1062.3
70°	1012.5	995.8	958.4	929.3	913.0
72.5°	854.9	838.2	817.6	788.5	776.1
75°	696.9	689.0	667.8	643.2	651.5
77.5°	556.1	539.3	530.9	518.6	506.3
80°	415.1	410.8	402.3	390.0	381.7
82.5°	282.2	282.2	278.2	261.5	261.5
85°	169.9	166.0	162.0	149.3	145.3
87.5°	74.9	66.4	58.1	45.8	41.4
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	9.97	10.73	11.02	11.79	13.21	9.52	10.29	10.57	11.34	12.77
	3H	11.62	12.31	12.68	13.37	14.82	11.13	11.82	12.19	12.88	14.33
	4H	12.21	12.86	13.28	13.93	15.38	11.72	12.37	12.79	13.43	14.88
	6H	12.61	13.21	13.69	14.28	15.74	12.11	12.71	13.19	13.78	15.24
	8H	12.71	13.28	13.80	14.37	15.83	12.21	12.78	13.30	13.87	15.32
	12H	12.76	13.30	13.85	14.38	15.86	12.25	12.79	13.34	13.87	15.35
4H	2H	10.42	11.07	11.49	12.13	13.59	10.06	10.71	11.14	11.78	13.23
	3H	12.28	12.82	13.36	13.91	15.38	11.87	12.41	12.96	13.51	14.97
	4H	12.99	13.49	14.08	14.57	16.06	12.57	13.07	13.66	14.15	15.64
	6H	13.51	13.93	14.61	15.04	16.52	13.07	13.50	14.17	14.61	16.09
	8H	13.66	14.06	14.75	15.15	16.65	13.22	13.62	14.32	14.72	16.21
	12H	13.73	14.09	14.84	15.20	16.70	13.28	13.64	14.39	14.75	16.25
8H	4H	13.18	13.58	14.28	14.68	16.18	12.81	13.21	13.90	14.30	15.80
	6H	13.81	14.14	14.93	15.28	16.78	13.43	13.76	14.55	14.90	16.39
	8H	14.04	14.33	15.16	15.45	16.96	13.64	13.93	14.77	15.05	16.57
	12H	14.17	14.42	15.30	15.54	17.09	13.76	14.01	14.89	15.13	16.68
12H	4H	13.16	13.52	14.28	14.64	16.14	12.80	13.16	13.91	14.27	15.77
	6H	13.84	14.13	14.97	15.25	16.77	13.47	13.76	14.60	14.88	16.39
	8H	14.08	14.34	15.22	15.46	17.01	13.70	13.96	14.84	15.08	16.63