

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: P904151

Luminaire Tested: DFN2DIP-SQ4F0-110D160US830-RLLONL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P904151
REPORT IS A COMBINATION OF REPORTS P901734 AND P898471
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-SQ4F0-110D160US830-RLLONL
Description: 4 foot, Square Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

Summary

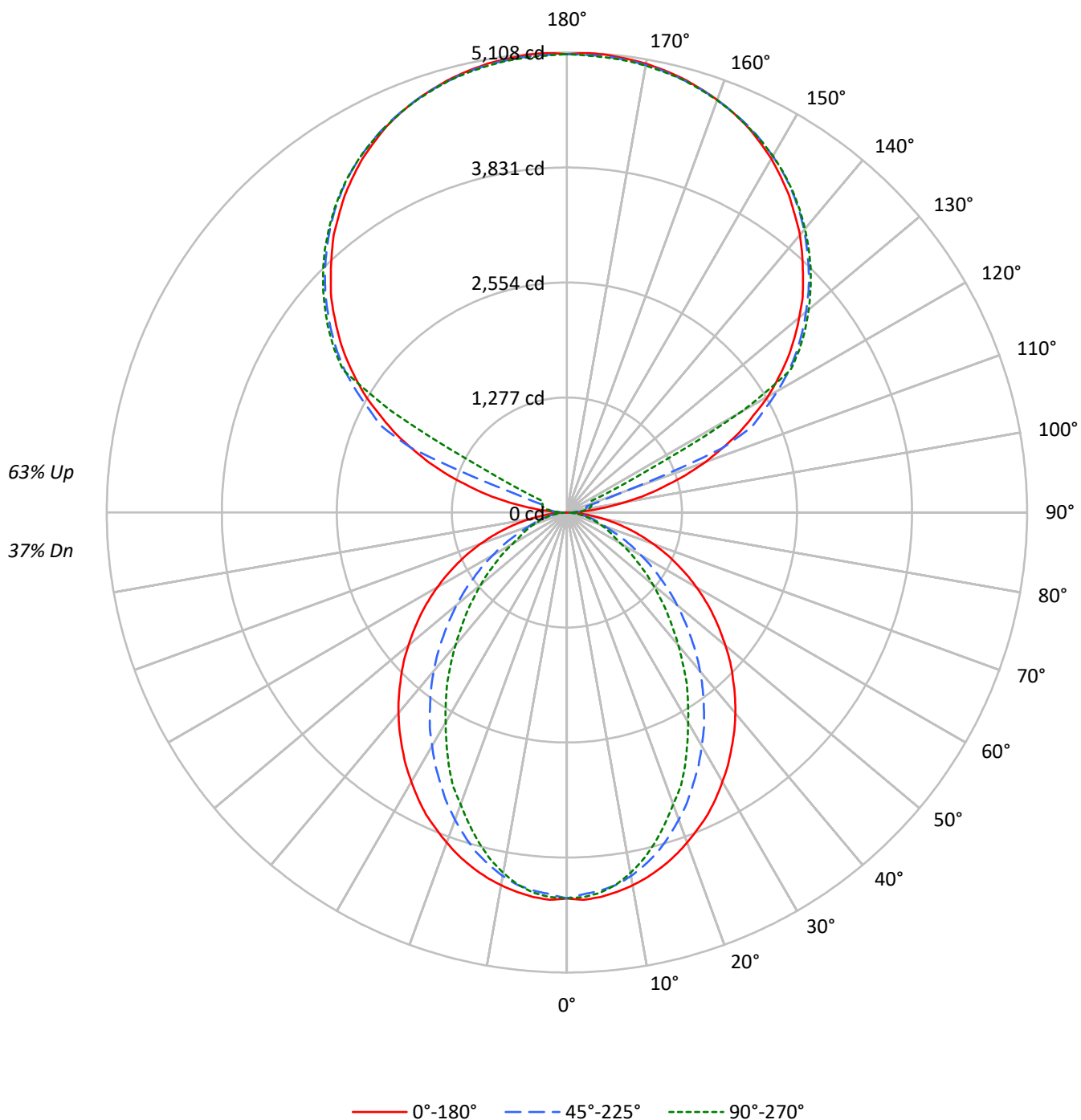
Lumens per Lamp: N/A
Luminaire Lumens: 23742.6 lumens
Efficiency: N/A
Efficacy: 104.5 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16
Luminous Opening: Rectangular w/ Sides (W: 3.92' x L: 3.92' x H: 0.1')
CIE Type: Semi-Indirect

Input Watts (W): 227.2
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

TEST NUMBER: P904151

CATALOG NUMBER: DFN2DIP-SQ4F0-110D160US830-RLLONL

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	94	94	94	94	76	76	76	60	60	60	44	44	44
1	95	91	87	84	86	83	80	77	67	65	63	53	52	50	40	39	38
2	87	80	74	69	79	73	68	64	59	56	53	47	45	42	35	34	33
3	80	71	64	58	72	64	58	54	53	48	45	42	39	36	32	30	28
4	73	63	55	49	66	57	51	46	47	42	38	37	34	31	29	26	25
5	67	56	48	42	61	51	44	39	42	37	33	34	30	27	26	23	22
6	62	50	42	37	56	46	39	34	38	33	29	31	27	24	24	21	19
7	57	45	38	32	52	42	35	30	35	29	26	28	24	21	22	19	17
8	53	41	34	29	48	38	31	27	31	26	23	26	22	19	20	17	15
9	49	38	30	26	45	35	28	24	29	24	21	23	20	17	18	16	14
10	46	34	28	23	42	32	26	21	27	22	19	22	18	16	17	15	13

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	3007	3007	3007
5°	3012	2960	2979
10°	2982	2902	2883
15°	2941	2807	2734
20°	2886	2675	2550
25°	2831	2527	2374
30°	2756	2376	2149
35°	2683	2213	1951
40°	2608	2044	1725
45°	2522	1857	1520
50°	2432	1668	1319
55°	2339	1466	1126
60°	2231	1255	928
65°	2106	1040	836
70°	1955	839	758
75°	1766	741	692
80°	1491	624	603
85°	1038	419	459

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 90°

Vertical Angle: 90°

Luminance: 2726 cd/sqm

TEST NUMBER: P904151

CATALOG NUMBER: DFN2DIP-SQ4F0-110D160US830-RLLONL

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	401.6	1.7
10°-20°	1102.5	4.6
20°-30°	1547.8	6.5
30°-40°	1687.2	7.1
40°-50°	1550.8	6.5
50°-60°	1217.9	5.1
60°-70°	792.7	3.3
70°-80°	408.1	1.7
80°-90°	113.1	0.5
90°-100°	167.8	0.7
100°-110°	625.6	2.6
110°-120°	1659.3	7.0
120°-130°	2752.0	11.6
130°-140°	2923.2	12.3
140°-150°	2716.8	11.4
150°-160°	2184.3	9.2
160°-170°	1407.5	5.9
170°-180°	484.4	2.0
0°-30°	3051.9	12.9
0°-40°	4739.1	20.0
0°-60°	7507.8	31.6
0°-90°	8821.7	37.2
90°-120°	2452.7	10.3
90°-150°	10844.8	45.7
90°-180°	14921.0	62.8
0°-180°	23742.6	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	4285	4285	4285	4285	4285	
5°	4285	4266	4215	4250	4239	406
15°	4076	4033	3901	3828	3789	1148
25°	3700	3575	3319	3161	3102	1701
35°	3188	2990	2649	2404	2319	1995
45°	2606	2346	1939	1663	1570	2013
55°	1981	1679	1260	1028	954	1771
65°	1338	1024	675	543	531	1326
75°	713	442	310	283	279	755
85°	167	85	74	74	74	191
90°	4	44	73	92	99	22
95°	239	118	144	162	158	283
105°	1120	1230	225	265	280	1196
115°	2118	2180	2272	567	302	2085
125°	2994	3042	3112	3138	3149	2670
135°	3705	3764	3797	3834	3826	2862
145°	4298	4294	4357	4382	4364	2688
155°	4732	4699	4744	4766	4736	2181
165°	4986	4964	4975	5001	4975	1409
175°	5100	5075	5082	5108	5071	485
180°	5090	5090	5090	5090	5090	

TEST NUMBER: P904151

CATALOG NUMBER: DFN2DIP-SQ4F0-110D160US830-RLLONL

CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	4285.1	4285.1	4285.1	4285.1	4285.1
2.5°	4304.4	4285.1	4242.3	4281.4	4273.6
5°	4285.1	4265.8	4215.1	4250.1	4238.6
7.5°	4250.1	4227.0	4172.7	4188.0	4168.6
10°	4203.6	4176.4	4099.1	4087.1	4064.1
12.5°	4145.6	4110.6	4005.7	3982.6	3939.8
15°	4075.6	4032.9	3901.2	3827.6	3788.8
17.5°	3994.2	3932.1	3769.1	3683.9	3621.8
20°	3901.2	3823.4	3629.6	3532.9	3447.3
22.5°	3800.4	3711.1	3486.1	3354.4	3296.4
25°	3699.6	3575.3	3319.4	3160.6	3102.2
27.5°	3579.5	3447.3	3164.3	2982.0	2892.8
30°	3451.5	3303.8	2993.6	2796.1	2691.1
32.5°	3327.3	3148.7	2831.0	2598.2	2501.1
35°	3187.8	2989.8	2648.8	2404.4	2318.8
37.5°	3052.0	2838.5	2478.0	2210.2	2113.6
40°	2908.4	2676.0	2299.5	2024.2	1923.4
42.5°	2761.1	2513.0	2121.4	1834.2	1737.5
45°	2606.0	2346.0	1939.1	1663.4	1570.5
47.5°	2458.7	2183.5	1764.6	1488.9	1403.8
50°	2295.8	2020.5	1593.9	1326.1	1245.0
52.5°	2136.6	1845.7	1431.0	1175.1	1101.4
55°	1981.4	1679.0	1260.2	1027.7	954.1
57.5°	1822.7	1512.4	1109.2	892.0	829.8
60°	1659.7	1349.5	950.0	752.5	690.4
62.5°	1500.9	1190.7	814.3	628.3	597.4
65°	1337.9	1023.6	674.8	543.1	531.1
67.5°	1182.9	868.6	543.1	476.8	465.3
70°	1019.9	717.6	449.7	411.0	395.4
72.5°	864.8	577.7	376.1	345.2	337.3
75°	713.4	441.9	310.2	283.0	279.4
77.5°	562.4	314.0	244.4	228.8	220.9
80°	422.5	225.1	186.0	170.8	170.8
82.5°	294.5	151.4	128.0	120.2	120.2
85°	166.6	85.2	73.6	73.6	73.6
87.5°	62.1	30.8	30.8	27.1	27.1
90°	3.5	44.2	73.4	92.3	99.2
92.5°	92.3	77.4	88.3	95.8	99.2
95°	239.2	117.6	143.5	162.2	158.3
97.5°	430.7	129.0	187.6	199.0	202.5
100°	652.1	147.4	209.9	239.2	246.7
102.5°	894.8	887.8	217.4	257.6	268.9
105°	1119.6	1230.2	224.8	265.0	279.8
107.5°	1381.0	1472.9	232.2	272.5	287.3
110°	1631.6	1708.6	644.6	276.4	290.8

TEST NUMBER: P904151

CATALOG NUMBER: DFN2DIP-SQ4F0-110D160US830-RLLONL

CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	1867.4	1933.4	1870.9	283.4	294.7
115°	2117.5	2180.0	2272.3	567.2	302.2
117.5°	2334.9	2408.3	2471.3	1944.4	979.6
120°	2578.0	2633.1	2699.5	2743.7	2246.5
122.5°	2784.0	2843.0	2916.9	2938.8	2942.7
125°	2993.9	3042.0	3112.0	3137.8	3148.8
127.5°	3185.4	3237.1	3292.6	3329.3	3332.8
130°	3366.1	3425.1	3465.4	3506.0	3502.5
132.5°	3550.2	3598.2	3638.5	3671.8	3668.3
135°	3704.9	3764.0	3796.8	3834.0	3826.5
137.5°	3866.8	3911.0	3948.1	3984.9	3973.9
140°	4025.1	4054.8	4095.1	4128.3	4110.0
142.5°	4158.0	4183.9	4231.5	4260.9	4242.5
145°	4298.0	4294.0	4356.6	4382.4	4364.1
147.5°	4419.1	4408.2	4470.8	4489.1	4474.6
150°	4537.2	4511.4	4570.5	4592.3	4574.0
152.5°	4636.5	4607.1	4662.3	4684.6	4658.8
155°	4732.2	4699.4	4743.6	4765.5	4736.2
157.5°	4809.7	4780.4	4813.6	4839.4	4809.7
160°	4876.1	4853.8	4876.1	4898.0	4872.2
162.5°	4934.8	4912.9	4931.2	4957.0	4923.8
165°	4986.3	4964.5	4975.4	5001.2	4975.4
167.5°	5027.0	5004.7	5016.1	5041.8	5008.7
170°	5060.2	5038.0	5045.3	5071.2	5038.0
172.5°	5082.1	5060.2	5067.7	5093.5	5060.2
175°	5100.5	5074.6	5082.1	5107.9	5071.2
177.5°	5107.9	5082.1	5086.1	5111.9	5078.6
180°	5089.5	5089.5	5089.5	5089.5	5089.5

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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	9.65	10.39	10.72	11.45	12.90	5.61	6.35	6.68	7.41	8.86
	3H	11.33	11.98	12.40	13.06	14.52	6.80	7.45	7.87	8.53	9.99
	4H	11.93	12.56	13.02	13.63	15.10	7.24	7.86	8.33	8.94	10.41
	6H	12.36	12.93	13.45	14.01	15.49	7.56	8.13	8.65	9.21	10.69
	8H	12.48	13.03	13.58	14.12	15.60	7.65	8.19	8.75	9.29	10.76
	12H	12.54	13.06	13.64	14.15	15.65	7.69	8.20	8.79	9.29	10.79
4H	2H	9.66	10.28	10.75	11.36	12.83	6.20	6.82	7.29	7.90	9.37
	3H	11.48	12.00	12.58	13.10	14.59	7.54	8.06	8.64	9.16	10.65
	4H	12.18	12.65	13.28	13.74	15.25	8.09	8.56	9.19	9.65	11.16
	6H	12.69	13.10	13.80	14.21	15.71	8.50	8.91	9.61	10.02	11.52
	8H	12.87	13.25	13.98	14.35	15.87	8.63	9.01	9.74	10.12	11.63
	12H	12.96	13.30	14.09	14.42	15.94	8.69	9.03	9.82	10.15	11.67
8H	4H	12.14	12.52	13.25	13.62	15.14	8.36	8.74	9.47	9.85	11.36
	6H	12.70	13.02	13.84	14.17	15.68	8.88	9.19	10.01	10.34	11.85
	8H	12.92	13.20	14.06	14.33	15.86	9.07	9.35	10.21	10.48	12.00
	12H	13.06	13.30	14.20	14.43	16.00	9.19	9.43	10.33	10.55	12.12
12H	4H	12.09	12.43	13.21	13.55	15.07	8.36	8.71	9.49	9.83	11.35
	6H	12.68	12.95	13.82	14.08	15.61	8.93	9.20	10.07	10.33	11.86
	8H	12.90	13.14	14.04	14.27	15.83	9.14	9.38	10.28	10.50	12.07