

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: P923246

Luminaire Tested: DFN2DIP-SQ4F0-110D160US940-RLLFLL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P923246
REPORT IS A COMBINATION OF REPORTS P900214 AND P896915
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-SQ4F0-110D160US940-RLLFLL
Description: 4 foot, Square Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Frosted Lens
Light Source: -
Ballast/Driver: -

Summary

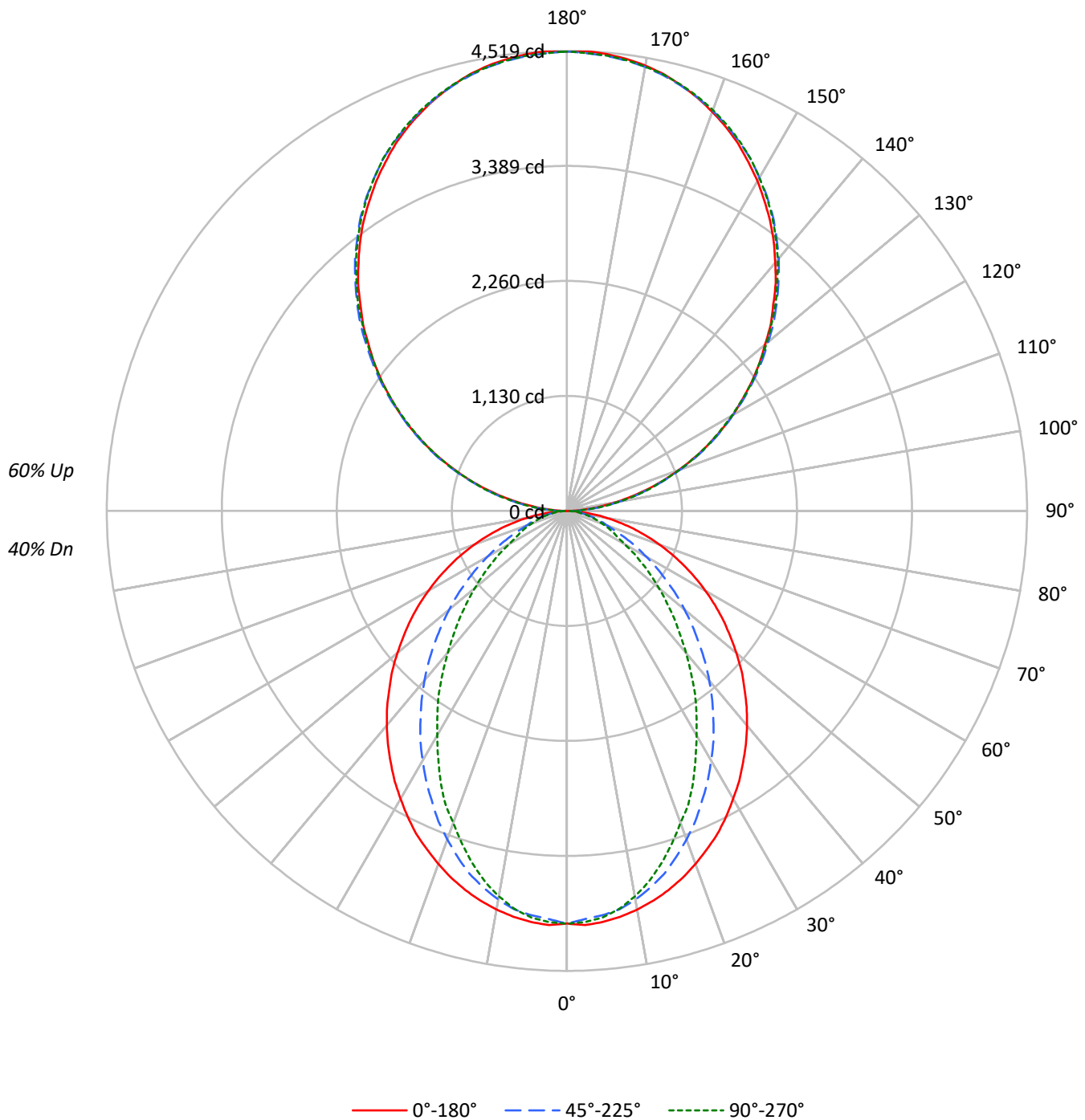
Lumens per Lamp: N/A
Luminaire Lumens: 20965.0 lumens
Efficiency: N/A
Efficacy: 92.3 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16
Luminous Opening: Rectangular w/ Sides (W: 3.92' x L: 3.92' x H: 0.1')
CIE Type: Semi-Indirect

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

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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	78	78	78	62	62	62	47	47	47
1	96	92	88	85	87	84	81	78	69	66	64	55	53	52	42	41	40
2	88	81	75	70	80	74	69	64	61	57	54	48	46	44	37	36	34
3	80	71	64	59	73	65	59	54	54	49	46	43	40	38	33	31	30
4	73	63	56	50	67	58	51	46	48	43	39	39	35	33	30	28	26
5	68	56	49	43	61	52	45	40	43	38	34	35	31	28	27	25	23
6	62	51	43	37	57	47	40	35	39	34	30	32	28	25	25	22	20
7	58	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	24	26	23	20	21	18	16
9	50	38	31	26	45	35	29	24	30	25	21	24	21	18	19	17	15
10	47	35	28	23	42	32	26	22	27	22	19	23	19	16	18	15	14

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: 90°

Vertical Angle: 90°

Luminance: 3551 cd/sqm

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	379.9	1.8
10°-20°	1043.0	5.0
20°-30°	1464.4	7.0
30°-40°	1596.2	7.6
40°-50°	1467.1	7.0
50°-60°	1152.2	5.5
60°-70°	750.0	3.6
70°-80°	386.0	1.8
80°-90°	111.4	0.5
90°-100°	279.2	1.3
100°-110°	887.2	4.2
110°-120°	1518.3	7.2
120°-130°	1996.8	9.5
130°-140°	2241.4	10.7
140°-150°	2197.9	10.5
150°-160°	1843.7	8.8
160°-170°	1222.7	5.8
170°-180°	427.4	2.0
0°-30°	2887.3	13.8
0°-40°	4483.6	21.4
0°-60°	7102.9	33.9
0°-90°	8350.3	39.8
90°-120°	2684.7	12.8
90°-150°	9120.8	43.5
90°-180°	12615.0	60.2
0°-180°	20965.0	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°	4	49	133	125	129	21
95°	199	237	244	244	237	221
105°	819	830	838	845	845	864
115°	1524	1545	1539	1534	1524	1507
125°	2216	2250	2239	2227	2223	1980
135°	2866	2909	2917	2913	2902	2216
145°	3480	3507	3529	3533	3518	2174
155°	3979	3990	4002	4021	4009	1832
165°	4329	4325	4325	4352	4333	1221
175°	4504	4494	4485	4513	4489	428
180°	4513	4513	4513	4513	4513	

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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°	4.1	49.0	133.3	125.2	129.2
92.5°	84.4	114.3	118.3	122.4	122.4
95°	198.6	236.7	243.5	243.5	236.7
97.5°	330.6	366.0	380.9	380.9	380.9
100°	483.0	514.2	525.1	525.1	521.0
102.5°	643.5	666.6	681.5	685.6	681.5
105°	818.9	829.8	838.0	844.8	844.8
107.5°	993.1	1009.4	1009.4	1012.2	993.1
110°	1161.8	1183.6	1183.6	1183.6	1172.7



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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	1344.1	1367.3	1363.2	1352.3	1344.1
115°	1523.7	1545.4	1538.6	1534.5	1523.7
117.5°	1701.9	1731.8	1712.8	1701.9	1691.0
120°	1881.5	1911.4	1881.5	1881.5	1869.2
122.5°	2044.7	2082.9	2063.8	2052.9	2044.7
125°	2216.2	2250.1	2239.3	2227.0	2222.9
127.5°	2383.5	2425.6	2410.6	2394.3	2383.5
130°	2539.9	2588.9	2582.1	2573.9	2558.9
132.5°	2715.4	2753.5	2756.2	2737.2	2726.3
135°	2866.4	2908.6	2916.8	2912.7	2901.8
137.5°	3035.1	3069.1	3076.0	3073.2	3056.9
140°	3183.4	3217.4	3236.5	3236.5	3221.5
142.5°	3335.8	3369.8	3380.7	3384.8	3369.8
145°	3480.0	3507.2	3528.9	3533.0	3518.1
147.5°	3609.2	3643.3	3659.6	3666.4	3651.4
150°	3742.5	3765.7	3780.7	3792.9	3780.7
152.5°	3860.9	3884.0	3903.1	3918.0	3903.1
155°	3979.3	3990.1	4002.4	4021.4	4009.2
157.5°	4081.3	4089.5	4096.2	4123.4	4104.5
160°	4172.4	4180.6	4184.7	4207.8	4191.5
162.5°	4256.8	4256.8	4260.9	4286.7	4267.6
165°	4328.9	4324.8	4324.8	4352.0	4333.0
167.5°	4394.2	4382.0	4382.0	4409.2	4390.1
170°	4443.1	4432.2	4428.2	4455.4	4432.2
172.5°	4477.2	4466.3	4462.2	4489.4	4466.3
175°	4504.4	4493.5	4485.3	4512.6	4489.4
177.5°	4519.4	4508.5	4500.3	4523.5	4500.3
180°	4512.6	4512.6	4512.6	4512.6	4512.6

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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	9.76	10.51	10.81	11.56	12.97	5.72	6.47	6.77	7.52	8.93
	3H	11.44	12.11	12.49	13.17	14.60	6.90	7.58	7.96	8.63	10.06
	4H	12.04	12.68	13.11	13.74	15.18	7.35	7.99	8.42	9.05	10.49
	6H	12.47	13.05	13.54	14.11	15.56	7.67	8.26	8.75	9.32	10.77
	8H	12.59	13.15	13.67	14.23	15.67	7.76	8.32	8.84	9.39	10.84
	12H	12.65	13.18	13.74	14.25	15.72	7.80	8.33	8.88	9.40	10.87
4H	2H	9.77	10.41	10.84	11.46	12.90	6.31	6.95	7.38	8.01	9.44
	3H	11.60	12.13	12.68	13.21	14.66	7.65	8.18	8.73	9.27	10.72
	4H	12.29	12.77	13.37	13.85	15.32	8.20	8.69	9.28	9.76	11.23
	6H	12.80	13.22	13.90	14.32	15.79	8.61	9.03	9.71	10.13	11.60
	8H	12.98	13.37	14.07	14.46	15.94	8.74	9.13	9.84	10.22	11.70
	12H	13.07	13.43	14.18	14.53	16.02	8.80	9.16	9.92	10.26	11.75
8H	4H	12.25	12.64	13.34	13.73	15.21	8.48	8.86	9.57	9.96	11.44
	6H	12.82	13.14	13.93	14.27	15.75	8.99	9.31	10.11	10.45	11.93
	8H	13.04	13.32	14.16	14.43	15.93	9.18	9.47	10.31	10.58	12.08
	12H	13.18	13.42	14.30	14.53	16.07	9.30	9.55	10.43	10.66	12.20
12H	4H	12.20	12.55	13.31	13.66	15.14	8.48	8.83	9.59	9.93	11.42
	6H	12.79	13.08	13.92	14.19	15.69	9.04	9.32	10.17	10.44	11.94
	8H	13.01	13.26	14.14	14.37	15.91	9.25	9.50	10.38	10.61	12.15