

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: P923244

Luminaire Tested: DFN2DIP-SQ4F0-110D160US940-FLLFLL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P923244
REPORT IS A COMBINATION OF REPORTS P900213 AND P896915
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-SQ4F0-110D160US940-FLLFLL
Description: 4 foot, Square Define Geo, with Direct Frosted Lens, Indirect Frosted Lens
Light Source: -
Ballast/Driver: -

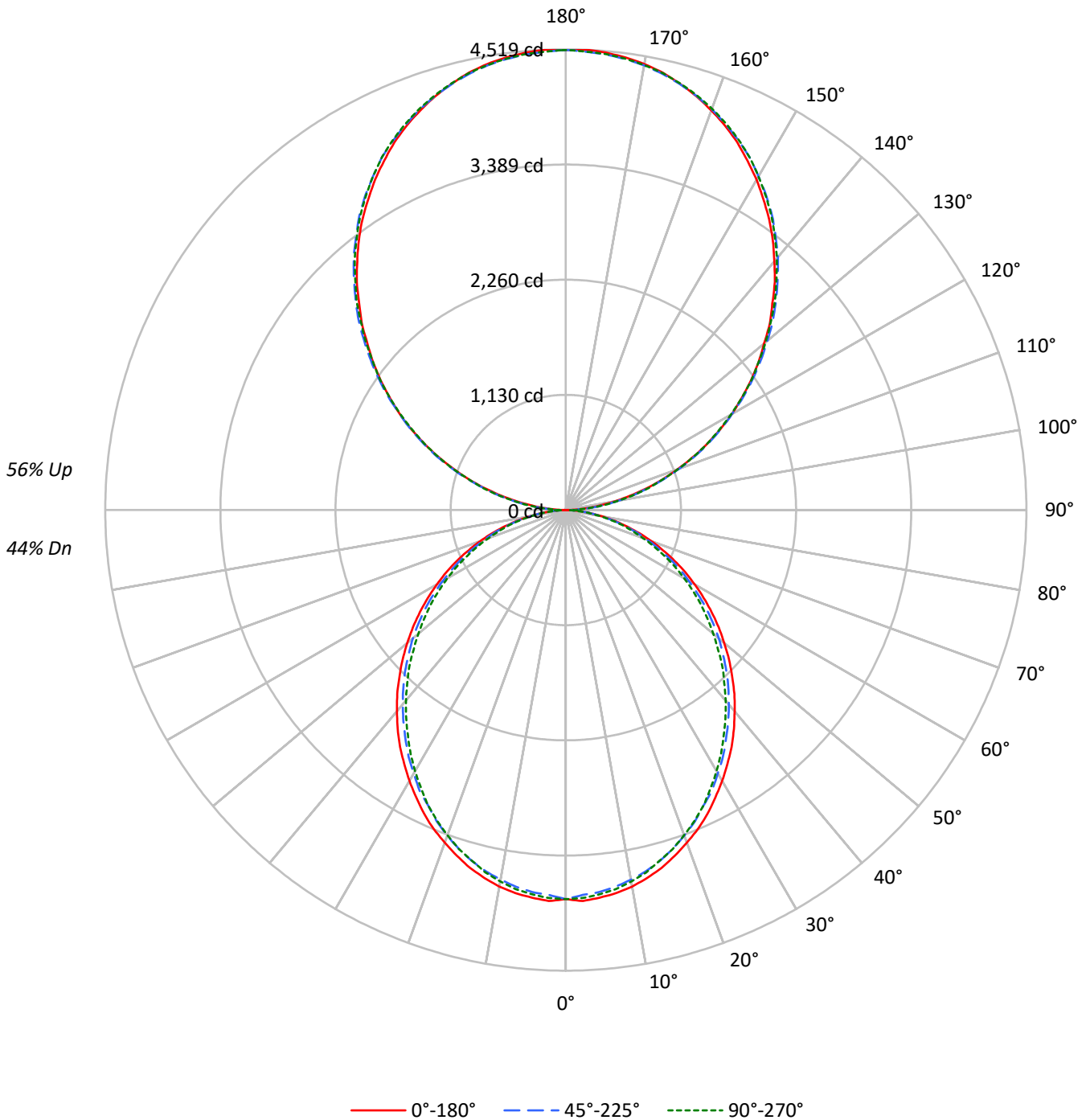
Summary

Lumens per Lamp: N/A
Luminaire Lumens: 22338.2 lumens
Efficiency: N/A
Efficacy: 98.3 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: General Diffuse

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				20
RC	80				70				50				30				10				0
RW	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	50	30	10	0
RCR																					
0	106	106	106	106	97	97	97	97	80	80	80	64	64	64	50	50	50	44	44	44	44
1	96	92	88	85	88	84	81	78	70	68	65	57	55	54	44	43	42	37	37	37	37
2	88	80	74	69	80	74	68	64	61	57	54	50	47	45	39	37	36	31	31	31	31
3	80	71	63	58	73	65	59	53	54	49	46	44	41	38	35	32	30	26	26	26	26
4	73	62	55	49	67	57	51	45	48	43	39	39	35	32	31	28	26	22	22	22	22
5	67	56	48	42	61	51	44	39	43	37	33	35	31	28	28	25	23	19	19	19	19
6	62	50	42	36	56	46	39	34	39	33	29	32	28	25	25	22	20	17	17	17	17
7	57	45	37	32	52	42	35	30	35	30	26	29	25	22	23	20	18	15	15	15	15
8	53	41	33	28	48	38	31	26	32	27	23	26	22	19	21	18	16	14	14	14	14
9	49	37	30	25	45	34	28	23	29	24	20	24	20	17	20	17	14	12	12	12	12
10	46	34	27	22	42	32	25	21	27	22	18	22	18	16	18	15	13	11	11	11	11

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	2678	2678	2678
5°	2682	2641	2659
10°	2661	2606	2624
15°	2621	2564	2569
20°	2568	2505	2512
25°	2516	2434	2446
30°	2450	2368	2362
35°	2387	2291	2273
40°	2311	2212	2189
45°	2234	2133	2102
50°	2150	2051	2002
55°	2062	1956	1910
60°	1963	1842	1805
65°	1855	1725	1681
70°	1717	1582	1548
75°	1526	1411	1426
80°	1296	1194	1192
85°	937	817	801

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°	359.2	1.6
10°-20°	1010.7	4.5
20°-30°	1485.4	6.6
30°-40°	1725.2	7.7
40°-50°	1723.0	7.7
50°-60°	1502.4	6.7
60°-70°	1110.6	5.0
70°-80°	628.4	2.8
80°-90°	178.7	0.8
90°-100°	279.2	1.2
100°-110°	887.2	4.0
110°-120°	1518.3	6.8
120°-130°	1996.8	8.9
130°-140°	2241.4	10.0
140°-150°	2197.9	9.8
150°-160°	1843.7	8.3
160°-170°	1222.7	5.5
170°-180°	427.4	1.9
0°-30°	2855.3	12.8
0°-40°	4580.5	20.5
0°-60°	7805.9	34.9
0°-90°	9723.6	43.5
90°-120°	2684.7	12.0
90°-150°	9120.8	40.8
90°-180°	12615.0	56.5
0°-180°	22338.2	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	3817	3817	3817	3817	3817	
5°	3817	3802	3762	3791	3784	362
15°	3633	3611	3564	3578	3560	1023
25°	3288	3259	3197	3204	3197	1513
35°	2837	2800	2742	2719	2701	1772
45°	2309	2283	2228	2188	2173	1782
55°	1747	1725	1681	1637	1619	1562
65°	1178	1156	1120	1086	1068	1165
75°	616	609	591	569	576	658
85°	150	147	143	132	128	168
90°	4	49	133	125	129	22
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°	3816.7	3816.7	3816.7	3816.7	3816.7
2.5°	3838.8	3820.5	3780.0	3816.7	3809.7
5°	3816.7	3802.3	3761.8	3790.9	3784.0
7.5°	3790.9	3769.2	3728.7	3758.3	3750.9
10°	3750.9	3725.1	3681.2	3710.3	3699.4
12.5°	3695.6	3673.8	3629.8	3648.1	3640.7
15°	3633.3	3611.4	3563.5	3578.3	3560.1
17.5°	3556.1	3534.4	3486.5	3504.8	3486.5
20°	3471.7	3449.8	3398.5	3409.4	3395.0
22.5°	3387.6	3354.4	3306.6	3306.6	3299.1
25°	3288.3	3259.1	3196.8	3203.8	3196.8
27.5°	3178.1	3152.4	3104.8	3094.0	3075.7
30°	3068.3	3038.7	2983.8	2972.9	2958.1
32.5°	2950.7	2928.9	2870.1	2847.9	2833.1
35°	2837.0	2800.4	2741.6	2719.4	2701.1
37.5°	2708.5	2675.4	2616.6	2590.9	2572.6
40°	2576.5	2546.9	2488.1	2455.4	2440.6
42.5°	2448.0	2418.4	2360.0	2323.0	2301.2
45°	2308.6	2282.9	2227.6	2187.5	2172.7
47.5°	2172.7	2147.1	2088.2	2047.7	2025.9
50°	2029.4	2011.2	1959.7	1908.3	1890.1
52.5°	1890.1	1864.3	1816.9	1776.3	1750.6
55°	1747.1	1724.9	1681.0	1636.9	1618.6
57.5°	1603.8	1585.6	1537.7	1493.6	1478.8
60°	1460.5	1446.2	1394.7	1354.2	1343.4
62.5°	1321.2	1295.5	1258.8	1222.3	1207.5
65°	1178.2	1156.0	1119.5	1086.4	1068.1
67.5°	1031.4	1012.8	980.1	954.4	939.6
70°	895.5	880.7	847.7	822.0	807.5
72.5°	756.2	741.4	723.1	697.4	686.4
75°	616.4	609.4	590.7	568.9	576.3
77.5°	491.8	477.0	469.6	458.7	447.8
80°	367.2	363.3	355.9	345.0	337.6
82.5°	249.6	249.6	246.1	231.3	231.3
85°	150.3	146.8	143.3	132.0	128.5
87.5°	66.2	58.8	51.4	40.5	36.6
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	10.08	10.88	11.09	11.90	13.26	9.63	10.44	10.64	11.46	12.82
	3H	11.74	12.46	12.76	13.49	14.87	11.25	11.97	12.27	13.00	14.38
	4H	12.32	13.01	13.36	14.04	15.43	11.83	12.51	12.86	13.55	14.94
	6H	12.72	13.36	13.77	14.39	15.79	12.22	12.85	13.27	13.89	15.29
	8H	12.83	13.43	13.88	14.48	15.88	12.33	12.93	13.38	13.98	15.38
	12H	12.88	13.45	13.93	14.50	15.92	12.37	12.94	13.42	13.99	15.41
4H	2H	10.53	11.22	11.57	12.25	13.64	10.18	10.86	11.22	11.89	13.28
	3H	12.40	12.97	13.44	14.03	15.43	11.99	12.56	13.04	13.62	15.02
	4H	13.11	13.64	14.17	14.69	16.11	12.69	13.21	13.74	14.26	15.69
	6H	13.63	14.08	14.69	15.15	16.57	13.20	13.65	14.26	14.72	16.14
	8H	13.78	14.20	14.84	15.27	16.70	13.34	13.76	14.41	14.83	16.26
	12H	13.85	14.23	14.93	15.31	16.75	13.40	13.78	14.48	14.86	16.30
8H	4H	13.30	13.72	14.37	14.79	16.23	12.93	13.35	13.99	14.42	15.85
	6H	13.94	14.29	15.03	15.39	16.83	13.55	13.90	14.64	15.01	16.44
	8H	14.16	14.47	15.26	15.56	17.01	13.77	14.07	14.86	15.17	16.62
	12H	14.29	14.56	15.39	15.65	17.14	13.88	14.15	14.98	15.24	16.73
12H	4H	13.29	13.67	14.37	14.75	16.19	12.92	13.30	14.00	14.38	15.82
	6H	13.97	14.27	15.06	15.37	16.82	13.60	13.90	14.69	14.99	16.44
	8H	14.21	14.48	15.31	15.57	17.06	13.83	14.10	14.93	15.19	16.68