

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: P923208

Luminaire Tested: DFN2DIP-SQ4F0-100D160US940-FLLFLL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P923208
REPORT IS A COMBINATION OF REPORTS P900211 AND P896915
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-SQ4F0-100D160US940-FLLFLL
Description: 4 foot, Square Define Geo, with Direct Frosted Lens, Indirect Frosted Lens
Light Source: -
Ballast/Driver: -

Summary

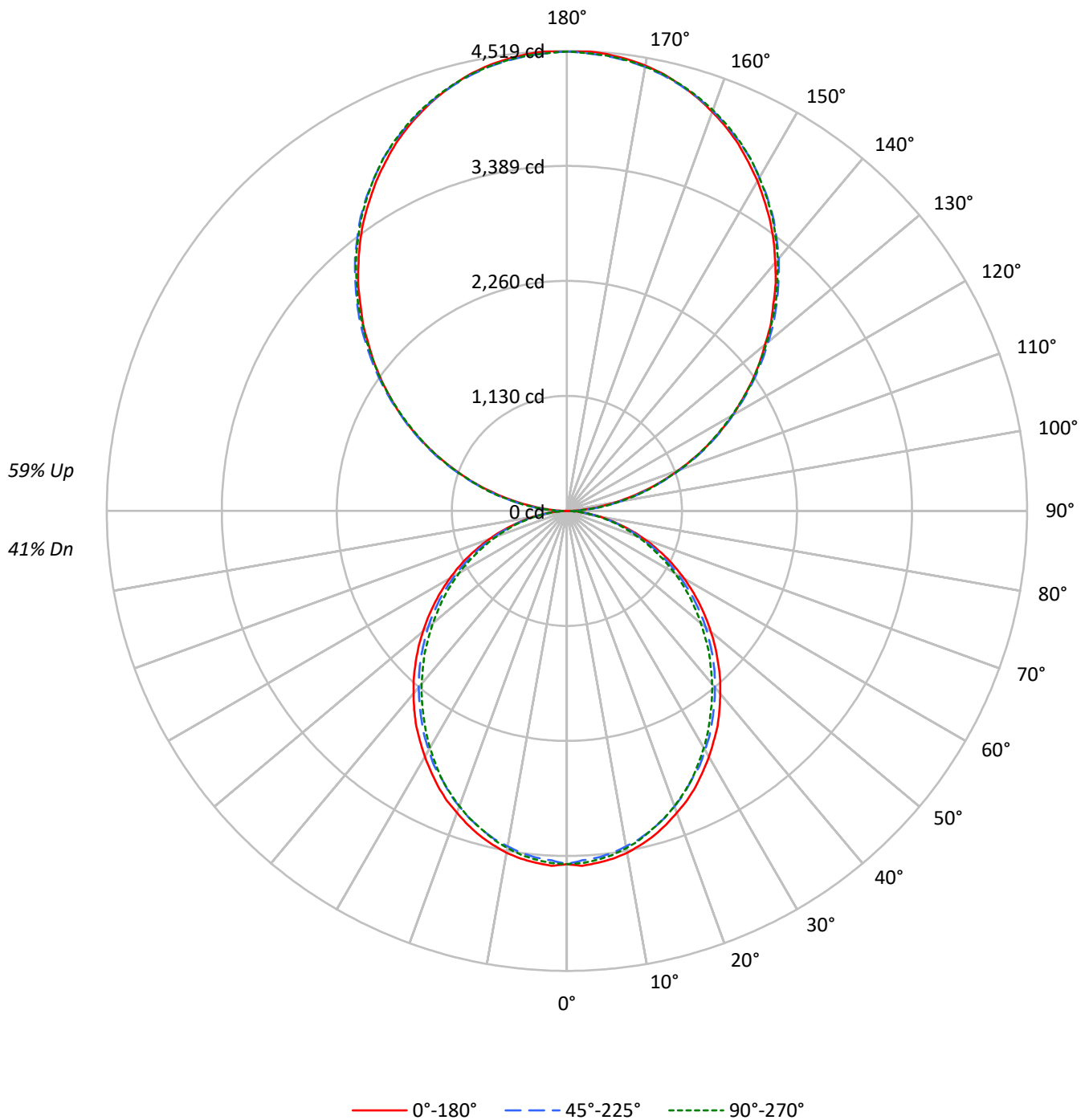
Lumens per Lamp: N/A
Luminaire Lumens: 21455.4 lumens
Efficiency: N/A
Efficacy: 99.9 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.92' x L: 3.92' x H: 0.1')
CIE Type: General Diffuse

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	105	105	105	105	96	96	96	96	78	78	78	63	63	63	48	48	48
1	96	92	88	84	87	84	80	77	69	66	64	55	53	52	42	41	41
2	87	80	74	69	79	73	68	63	60	56	53	48	46	43	37	36	34
3	80	70	63	57	72	64	58	53	53	48	45	43	39	37	33	31	29
4	73	62	54	48	66	57	50	45	47	42	38	38	34	31	30	27	25
5	67	55	47	41	61	51	44	38	42	37	33	34	30	27	27	24	22
6	61	50	42	36	56	46	38	33	38	33	29	31	27	24	24	21	19
7	57	45	37	31	52	41	34	29	34	29	25	28	24	21	22	19	17
8	53	40	33	28	48	37	31	26	31	26	22	26	22	19	20	17	15
9	49	37	30	25	45	34	27	23	29	23	20	24	20	17	19	16	14
10	46	34	27	22	42	31	25	21	26	21	18	22	18	15	17	15	13

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	2435	2435	2435
5°	2438	2401	2418
10°	2419	2369	2386
15°	2383	2331	2335
20°	2335	2277	2283
25°	2287	2213	2224
30°	2227	2153	2147
35°	2170	2082	2066
40°	2100	2011	1990
45°	2031	1940	1911
50°	1954	1864	1820
55°	1875	1778	1737
60°	1784	1675	1641
65°	1686	1568	1528
70°	1561	1438	1407
75°	1387	1283	1297
80°	1178	1085	1083
85°	851	743	728

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°	326.6	1.5
10°-20°	918.8	4.3
20°-30°	1350.3	6.3
30°-40°	1568.3	7.3
40°-50°	1566.4	7.3
50°-60°	1365.8	6.4
60°-70°	1009.7	4.7
70°-80°	571.3	2.7
80°-90°	163.6	0.8
90°-100°	279.2	1.3
100°-110°	887.2	4.1
110°-120°	1518.3	7.1
120°-130°	1996.8	9.3
130°-140°	2241.4	10.4
140°-150°	2197.9	10.2
150°-160°	1843.7	8.6
160°-170°	1222.7	5.7
170°-180°	427.4	2.0
0°-30°	2595.7	12.1
0°-40°	4164.0	19.4
0°-60°	7096.2	33.1
0°-90°	8840.7	41.2
90°-120°	2684.7	12.5
90°-150°	9120.8	42.5
90°-180°	12615.0	58.8
0°-180°	21455.4	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	3470	3470	3470	3470	3470	
5°	3470	3457	3420	3446	3440	329
15°	3303	3283	3240	3253	3236	930
25°	2989	2963	2906	2912	2906	1376
35°	2579	2546	2492	2472	2456	1611
45°	2099	2075	2025	1989	1975	1620
55°	1588	1568	1528	1488	1472	1420
65°	1071	1051	1018	988	971	1059
75°	560	554	537	517	524	598
85°	137	134	130	120	117	152
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°	3469.7	3469.7	3469.7	3469.7	3469.7
2.5°	3489.9	3473.2	3436.4	3469.7	3463.3
5°	3469.7	3456.6	3419.8	3446.4	3440.0
7.5°	3446.4	3426.5	3389.7	3416.6	3409.9
10°	3409.9	3386.5	3346.5	3373.1	3363.2
12.5°	3359.6	3339.8	3299.8	3316.4	3309.7
15°	3303.0	3283.2	3239.6	3253.0	3236.5
17.5°	3232.9	3213.1	3169.5	3186.2	3169.5
20°	3156.0	3136.2	3089.5	3099.4	3086.3
22.5°	3079.6	3049.6	3006.0	3006.0	2999.3
25°	2989.4	2962.8	2906.2	2912.5	2906.2
27.5°	2889.1	2865.8	2822.6	2812.7	2796.0
30°	2789.4	2762.4	2712.5	2702.6	2689.1
32.5°	2682.4	2662.6	2609.1	2589.0	2575.5
35°	2579.1	2545.8	2492.3	2472.2	2455.5
37.5°	2462.3	2432.1	2378.7	2355.4	2338.7
40°	2342.3	2315.3	2261.9	2232.2	2218.8
42.5°	2225.4	2198.5	2145.5	2111.8	2092.0
45°	2098.7	2075.4	2025.1	1988.6	1975.2
47.5°	1975.2	1951.9	1898.4	1861.5	1841.7
50°	1844.9	1828.3	1781.5	1734.8	1718.2
52.5°	1718.2	1694.9	1651.6	1614.9	1591.5
55°	1588.3	1568.2	1528.1	1488.1	1471.5
57.5°	1458.0	1441.4	1397.8	1357.9	1344.4
60°	1327.8	1314.6	1267.9	1231.1	1221.2
62.5°	1201.0	1177.7	1144.4	1111.2	1097.7
65°	1071.1	1051.0	1017.7	987.6	971.0
67.5°	937.7	920.7	891.0	867.6	854.2
70°	814.1	800.7	770.6	747.3	734.1
72.5°	687.4	674.0	657.4	634.0	624.0
75°	560.4	554.0	537.0	517.2	523.9
77.5°	447.1	433.6	426.9	417.0	407.1
80°	333.8	330.3	323.5	313.6	306.9
82.5°	226.9	226.9	223.7	210.3	210.3
85°	136.6	133.5	130.3	120.0	116.8
87.5°	60.2	53.4	46.7	36.8	33.3
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	9.50	10.29	10.53	11.33	12.72	9.06	9.85	10.09	10.88	12.27
	3H	11.16	11.87	12.20	12.91	14.32	10.67	11.38	11.71	12.42	13.83
	4H	11.75	12.42	12.80	13.47	14.88	11.25	11.92	12.31	12.97	14.39
	6H	12.15	12.76	13.21	13.82	15.25	11.65	12.26	12.71	13.32	14.75
	8H	12.25	12.84	13.32	13.91	15.33	11.75	12.34	12.82	13.40	14.83
	12H	12.30	12.86	13.37	13.92	15.37	11.79	12.35	12.86	13.41	14.86
4H	2H	9.95	10.62	11.01	11.67	13.09	9.60	10.27	10.66	11.32	12.74
	3H	11.82	12.38	12.88	13.45	14.88	11.41	11.97	12.48	13.04	14.48
	4H	12.53	13.05	13.60	14.11	15.56	12.11	12.62	13.18	13.69	15.14
	6H	13.05	13.49	14.13	14.58	16.02	12.62	13.06	13.70	14.15	15.59
	8H	13.20	13.61	14.28	14.69	16.15	12.76	13.17	13.84	14.25	15.72
	12H	13.27	13.64	14.37	14.74	16.21	12.82	13.19	13.92	14.29	15.76
8H	4H	12.72	13.14	13.80	14.22	15.68	12.35	12.76	13.43	13.84	15.30
	6H	13.36	13.70	14.46	14.82	16.28	12.97	13.31	14.08	14.44	15.90
	8H	13.58	13.88	14.69	14.98	16.46	13.19	13.49	14.30	14.59	16.07
	12H	13.71	13.97	14.83	15.08	16.59	13.30	13.56	14.41	14.66	16.18
12H	4H	12.71	13.08	13.80	14.17	15.64	12.34	12.71	13.44	13.81	15.27
	6H	13.39	13.68	14.50	14.79	16.27	13.02	13.31	14.13	14.42	15.90
	8H	13.63	13.89	14.74	14.99	16.51	13.25	13.51	14.36	14.61	16.13