

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: P917789

Luminaire Tested: DFN2DIP-SQ4F0-110D160US930-FLLONL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P917789
REPORT IS A COMBINATION OF REPORTS P901733 AND P898471
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-SQ4F0-110D160US930-FLLONL
Description: 4 foot, Square Define Geo, with Direct Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

Summary

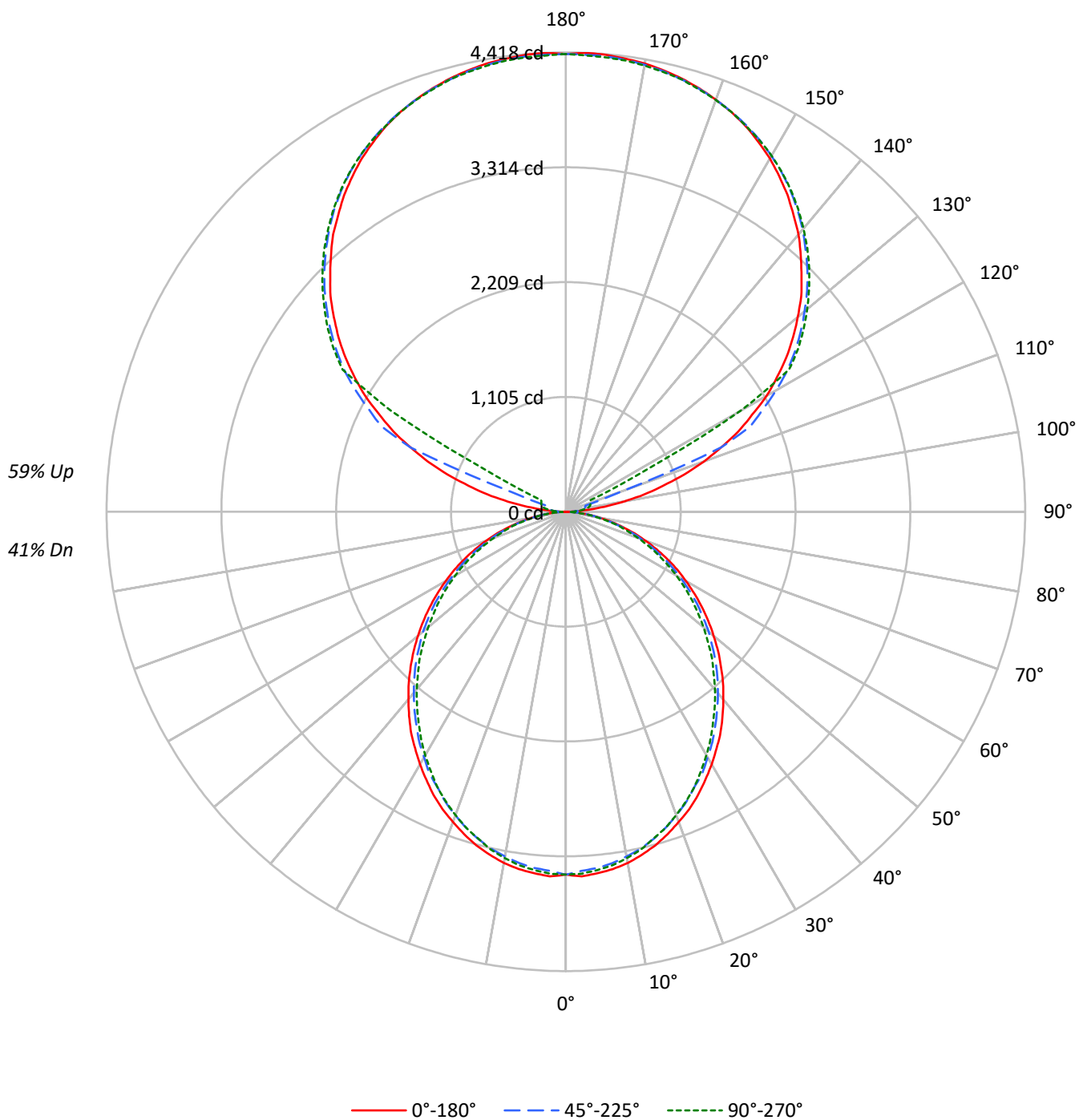
Lumens per Lamp: N/A
Luminaire Lumens: 21792.9 lumens
Efficiency: N/A
Efficacy: 95.9 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.92' x L: 3.92' x H: 0.1')
CIE Type: General Diffuse

Input Watts (W): 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	50	30	10
RCR																				
0	105	105	105	105	96	96	96	96	78	78	78	62	62	62	48	48	48	41		
1	96	91	88	84	87	83	80	77	69	66	64	55	53	52	42	41	40	34		
2	87	80	74	69	79	73	68	63	60	56	53	48	46	43	37	35	34	29		
3	79	70	63	57	72	64	58	53	53	48	45	42	39	37	33	31	29	24		
4	73	62	54	48	66	57	50	45	47	42	38	38	34	31	29	27	25	21		
5	67	55	47	41	60	51	44	38	42	37	33	34	30	27	26	24	22	18		
6	61	49	41	36	56	45	38	33	38	32	28	31	27	24	24	21	19	16		
7	57	45	37	31	52	41	34	29	34	29	25	28	24	21	22	19	17	14		
8	53	40	33	28	48	37	30	26	31	26	22	25	22	19	20	17	15	13		
9	49	37	29	25	45	34	27	23	29	23	20	23	20	17	19	16	14	11		
10	46	34	27	22	42	31	25	21	26	21	18	22	18	15	17	14	12	10		

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	2449	2449	2449
5°	2452	2415	2431
10°	2433	2383	2399
15°	2397	2344	2348
20°	2348	2290	2297
25°	2300	2225	2236
30°	2240	2165	2160
35°	2183	2094	2078
40°	2113	2022	2001
45°	2042	1951	1922
50°	1966	1875	1831
55°	1885	1788	1747
60°	1795	1684	1651
65°	1696	1577	1537
70°	1570	1446	1415
75°	1395	1290	1304
80°	1185	1091	1090
85°	857	747	732

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 90°

Vertical Angle: 90°

Luminance: 2361 cd/sqm

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	328.4	1.5
10°-20°	924.1	4.2
20°-30°	1358.1	6.2
30°-40°	1577.3	7.2
40°-50°	1575.4	7.2
50°-60°	1373.7	6.3
60°-70°	1015.5	4.7
70°-80°	574.5	2.6
80°-90°	159.4	0.7
90°-100°	145.1	0.7
100°-110°	541.2	2.5
110°-120°	1435.3	6.6
120°-130°	2380.5	10.9
130°-140°	2528.6	11.6
140°-150°	2350.1	10.8
150°-160°	1889.4	8.7
160°-170°	1217.5	5.6
170°-180°	419.0	1.9
0°-30°	2610.6	12.0
0°-40°	4187.9	19.2
0°-60°	7137.0	32.7
0°-90°	8886.3	40.8
90°-120°	2121.6	9.7
90°-150°	9380.7	43.0
90°-180°	12907.0	59.2
0°-180°	21792.9	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	3490	3490	3490	3490	3490	
5°	3490	3476	3439	3466	3460	331
15°	3322	3302	3258	3272	3255	936
25°	3006	2980	2923	2929	2923	1383
35°	2594	2560	2507	2486	2470	1620
45°	2111	2087	2037	2000	1987	1629
55°	1597	1577	1537	1497	1480	1428
65°	1077	1057	1024	993	977	1065
75°	564	557	540	520	527	602
85°	138	134	131	121	118	153
90°	3	38	64	80	86	20
95°	207	102	124	140	137	245
105°	968	1064	194	229	242	1035
115°	1832	1886	1966	491	261	1803
125°	2590	2631	2692	2714	2724	2310
135°	3205	3256	3284	3316	3310	2476
145°	3718	3714	3768	3791	3775	2325
155°	4093	4065	4103	4122	4097	1886
165°	4313	4294	4304	4326	4304	1219
175°	4412	4390	4396	4418	4386	420
180°	4402	4402	4402	4402	4402	

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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	3489.6	3489.6	3489.6	3489.6	3489.6
2.5°	3509.9	3493.1	3456.1	3489.6	3483.2
5°	3489.6	3476.4	3439.4	3466.1	3459.7
7.5°	3466.1	3446.2	3409.2	3436.2	3429.5
10°	3429.5	3405.9	3365.7	3392.4	3382.4
12.5°	3378.9	3358.9	3318.8	3335.5	3328.7
15°	3321.9	3302.0	3258.2	3271.7	3255.0
17.5°	3251.4	3231.5	3187.7	3204.4	3187.7
20°	3174.2	3154.2	3107.3	3117.2	3104.1
22.5°	3097.3	3067.0	3023.2	3023.2	3016.4
25°	3006.5	2979.8	2922.8	2929.3	2922.8
27.5°	2905.7	2882.2	2838.8	2828.8	2812.1
30°	2805.4	2778.3	2728.1	2718.1	2704.6
32.5°	2697.8	2677.9	2624.1	2603.8	2590.3
35°	2593.9	2560.4	2506.6	2486.3	2469.6
37.5°	2476.4	2446.1	2392.4	2368.8	2352.1
40°	2355.7	2328.7	2274.9	2245.0	2231.5
42.5°	2238.2	2211.2	2157.8	2123.9	2104.0
45°	2110.8	2087.2	2036.7	2000.1	1986.6
47.5°	1986.6	1963.1	1909.3	1872.3	1852.3
50°	1855.5	1838.8	1791.8	1744.8	1728.1
52.5°	1728.1	1704.5	1661.2	1624.1	1600.6
55°	1597.4	1577.1	1536.9	1496.6	1479.9
57.5°	1466.4	1449.7	1405.9	1365.6	1352.1
60°	1335.4	1322.3	1275.2	1238.2	1228.2
62.5°	1207.9	1184.5	1151.0	1117.5	1104.0
65°	1077.3	1057.0	1023.5	993.3	976.6
67.5°	943.1	926.0	896.1	872.6	859.1
70°	818.8	805.3	775.0	751.5	738.3
72.5°	691.4	677.8	661.1	637.6	627.6
75°	563.5	557.2	540.1	520.2	526.9
77.5°	449.6	436.1	429.3	419.4	409.4
80°	335.7	332.2	325.4	315.4	308.7
82.5°	228.2	228.2	225.0	211.5	211.5
85°	137.5	134.2	131.0	120.7	117.5
87.5°	60.5	53.7	47.0	37.0	33.4
90°	3.0	38.2	63.5	79.8	85.9
92.5°	79.8	66.9	76.4	82.8	85.9
95°	206.9	101.7	124.1	140.3	137.0
97.5°	372.6	111.6	162.2	172.1	175.1
100°	564.0	127.5	181.6	206.9	213.4
102.5°	774.0	767.9	188.0	222.8	232.6
105°	968.4	1064.1	194.4	229.3	242.1
107.5°	1194.6	1274.1	200.9	235.7	248.5
110°	1411.4	1478.0	557.6	239.0	251.5



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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	1615.3	1672.4	1618.3	245.2	254.9
115°	1831.6	1885.7	1965.5	490.6	261.4
117.5°	2019.7	2083.2	2137.7	1681.9	847.3
120°	2230.0	2277.6	2335.1	2373.3	1943.3
122.5°	2408.1	2459.2	2523.1	2542.0	2545.4
125°	2589.7	2631.3	2691.9	2714.2	2723.7
127.5°	2755.4	2800.1	2848.1	2879.9	2882.9
130°	2911.7	2962.7	2997.5	3032.7	3029.6
132.5°	3070.9	3112.5	3147.3	3176.1	3173.1
135°	3204.8	3255.9	3284.3	3316.4	3309.9
137.5°	3344.8	3383.0	3415.1	3446.9	3437.5
140°	3481.7	3507.4	3542.2	3571.0	3555.1
142.5°	3596.7	3619.0	3660.3	3685.6	3669.7
145°	3717.8	3714.3	3768.5	3790.7	3774.9
147.5°	3822.5	3813.1	3867.2	3883.1	3870.5
150°	3924.7	3902.3	3953.5	3972.4	3956.5
152.5°	4010.5	3985.2	4032.9	4052.2	4029.9
155°	4093.4	4065.0	4103.2	4122.1	4096.8
157.5°	4160.4	4135.0	4163.7	4186.1	4160.4
160°	4217.9	4198.5	4217.9	4236.8	4214.4
162.5°	4268.6	4249.7	4265.5	4287.8	4259.1
165°	4313.2	4294.3	4303.7	4326.1	4303.7
167.5°	4348.4	4329.1	4338.9	4361.2	4332.5
170°	4377.1	4357.9	4364.2	4386.5	4357.9
172.5°	4396.0	4377.1	4383.5	4405.9	4377.1
175°	4411.9	4389.6	4396.0	4418.3	4386.5
177.5°	4418.3	4396.0	4399.4	4421.8	4393.0
180°	4402.4	4402.4	4402.4	4402.4	4402.4

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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	9.48	10.26	10.51	11.30	12.70	9.03	9.82	10.07	10.86	12.25
	3H	11.14	11.84	12.18	12.89	14.30	10.65	11.35	11.69	12.40	13.81
	4H	11.72	12.39	12.78	13.44	14.86	11.23	11.90	12.28	12.95	14.37
	6H	12.12	12.74	13.19	13.79	15.23	11.62	12.24	12.69	13.29	14.73
	8H	12.23	12.81	13.30	13.88	15.31	11.73	12.31	12.79	13.38	14.81
	12H	12.28	12.83	13.35	13.89	15.35	11.77	12.32	12.84	13.38	14.84
4H	2H	9.93	10.60	10.99	11.65	13.07	9.58	10.24	10.64	11.29	12.72
	3H	11.79	12.35	12.86	13.43	14.86	11.39	11.94	12.46	13.02	14.46
	4H	12.51	13.02	13.58	14.09	15.55	12.08	12.59	13.16	13.66	15.12
	6H	13.02	13.46	14.11	14.55	16.01	12.59	13.03	13.67	14.12	15.57
	8H	13.17	13.58	14.26	14.67	16.14	12.74	13.15	13.82	14.23	15.70
	12H	13.25	13.62	14.35	14.71	16.19	12.80	13.17	13.90	14.26	15.74
8H	4H	12.70	13.11	13.78	14.19	15.66	12.32	12.73	13.41	13.82	15.28
	6H	13.33	13.67	14.44	14.80	16.26	12.95	13.29	14.06	14.41	15.88
	8H	13.56	13.85	14.67	14.96	16.44	13.16	13.46	14.28	14.57	16.05
	12H	13.69	13.95	14.80	15.05	16.57	13.28	13.54	14.39	14.64	16.16
12H	4H	12.68	13.05	13.78	14.15	15.62	12.31	12.68	13.41	13.78	15.25
	6H	13.36	13.66	14.47	14.77	16.25	12.99	13.29	14.10	14.40	15.88
	8H	13.60	13.86	14.72	14.97	16.49	13.22	13.48	14.34	14.59	16.11