

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: P917790

Luminaire Tested: DFN2DIP-SQ4F0-110D160US930-RLLFLL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P917790
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-SQ4F0-110D160US930-RLLFLL
Description: 4 foot, Square Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Frosted Lens
Light Source: -
Ballast/Driver: -

Summary

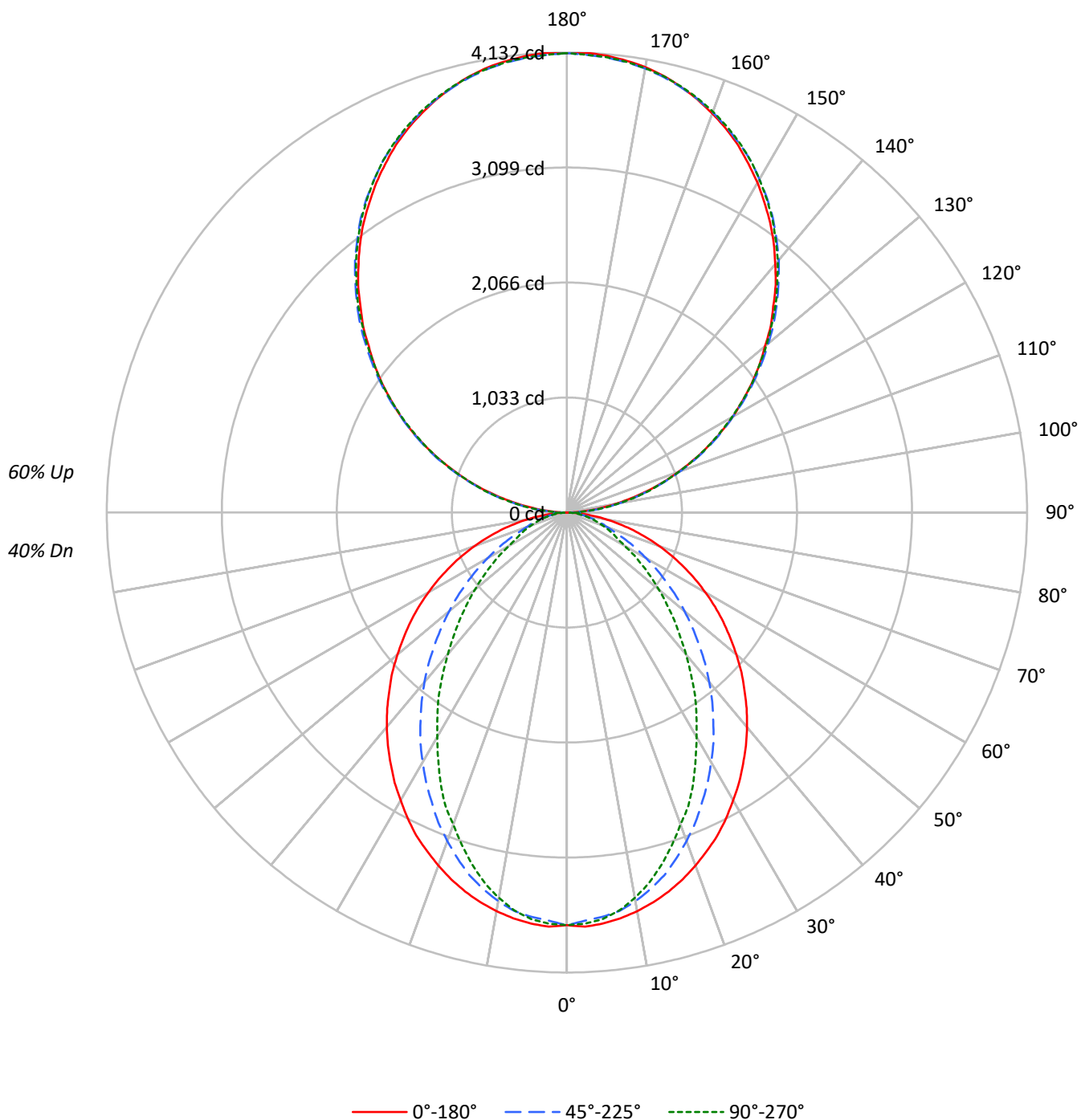
Lumens per Lamp: N/A
Luminaire Lumens: 19168.5 lumens
Efficiency: N/A
Efficacy: 84.4 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16
Luminous Opening: Rectangular w/ Sides (W: 3.92' x L: 3.92' x H: 0.1')
CIE Type: Semi-Indirect

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°	2601	2601	2601
5°	2605	2560	2577
10°	2579	2510	2494
15°	2544	2428	2365
20°	2497	2314	2206
25°	2448	2186	2053
30°	2384	2055	1859
35°	2320	1914	1688
40°	2256	1768	1492
45°	2181	1606	1314
50°	2104	1443	1141
55°	2023	1268	974
60°	1929	1085	803
65°	1822	899	723
70°	1691	726	656
75°	1527	641	598
80°	1290	540	521
85°	898	363	397

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 90°

Vertical Angle: 90°

Luminance: 3246 cd/sqm

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	347.4	1.8
10°-20°	953.6	5.0
20°-30°	1338.9	7.0
30°-40°	1459.5	7.6
40°-50°	1341.4	7.0
50°-60°	1053.5	5.5
60°-70°	685.7	3.6
70°-80°	353.0	1.8
80°-90°	101.8	0.5
90°-100°	255.3	1.3
100°-110°	811.2	4.2
110°-120°	1388.2	7.2
120°-130°	1825.7	9.5
130°-140°	2049.3	10.7
140°-150°	2009.6	10.5
150°-160°	1685.7	8.8
160°-170°	1117.9	5.8
170°-180°	390.8	2.0
0°-30°	2639.9	13.8
0°-40°	4099.4	21.4
0°-60°	6494.2	33.9
0°-90°	7634.8	39.8
90°-120°	2454.7	12.8
90°-150°	8339.3	43.5
90°-180°	11534.0	60.2
0°-180°	19168.5	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	3707	3707	3707	3707	3707	
5°	3707	3690	3646	3676	3666	351
15°	3525	3488	3374	3311	3277	993
25°	3200	3093	2871	2734	2683	1472
35°	2757	2586	2291	2080	2006	1726
45°	2254	2029	1677	1439	1358	1741
55°	1714	1452	1090	889	825	1532
65°	1157	885	584	470	459	1147
75°	617	382	268	245	242	653
85°	144	74	64	64	64	165
90°	4	45	122	114	118	19
95°	182	216	223	223	216	202
105°	749	759	766	772	772	790
115°	1393	1413	1407	1403	1393	1378
125°	2026	2057	2047	2036	2032	1811
135°	2621	2659	2667	2663	2653	2026
145°	3182	3207	3226	3230	3217	1988
155°	3638	3648	3659	3677	3666	1675
165°	3958	3954	3954	3979	3962	1117
175°	4118	4108	4101	4126	4105	391
180°	4126	4126	4126	4126	4126	

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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	3706.6	3706.6	3706.6	3706.6	3706.6
2.5°	3723.3	3706.6	3669.6	3703.4	3696.6
5°	3706.6	3689.9	3646.1	3676.3	3666.4
7.5°	3676.3	3656.4	3609.4	3622.6	3605.8
10°	3636.1	3612.6	3545.7	3535.4	3515.5
12.5°	3585.9	3555.7	3464.9	3445.0	3407.9
15°	3525.4	3488.4	3374.5	3310.8	3277.3
17.5°	3455.0	3401.3	3260.3	3186.6	3132.9
20°	3374.5	3307.3	3139.6	3056.0	2982.0
22.5°	3287.4	3210.1	3015.5	2901.6	2851.3
25°	3200.1	3092.7	2871.3	2733.9	2683.4
27.5°	3096.3	2982.0	2737.1	2579.4	2502.2
30°	2985.5	2857.8	2589.5	2418.6	2327.8
32.5°	2878.1	2723.6	2448.8	2247.5	2163.5
35°	2757.4	2586.2	2291.2	2079.8	2005.8
37.5°	2640.0	2455.3	2143.5	1911.8	1828.2
40°	2515.8	2314.7	1989.1	1750.9	1663.8
42.5°	2388.3	2173.7	1835.0	1586.6	1502.9
45°	2254.2	2029.3	1677.3	1438.8	1358.4
47.5°	2126.8	1888.7	1526.4	1287.9	1214.3
50°	1985.8	1747.8	1378.8	1147.0	1076.9
52.5°	1848.1	1596.5	1237.8	1016.4	952.7
55°	1713.9	1452.4	1090.1	889.0	825.3
57.5°	1576.6	1308.2	959.4	771.6	717.8
60°	1435.7	1167.3	821.7	650.9	597.2
62.5°	1298.3	1030.0	704.3	543.5	516.7
65°	1157.3	885.4	583.7	469.8	459.4
67.5°	1023.2	751.3	469.8	412.5	402.5
70°	882.2	620.7	389.0	355.6	342.0
72.5°	748.0	499.7	325.3	298.6	291.8
75°	617.1	382.2	268.3	244.8	241.7
77.5°	486.5	271.6	211.4	197.9	191.1
80°	365.5	194.7	160.9	147.7	147.7
82.5°	254.8	130.9	110.7	104.0	104.0
85°	144.1	73.7	63.7	63.7	63.7
87.5°	53.7	26.7	26.7	23.5	23.5
90°	3.8	44.8	121.9	114.5	118.1
92.5°	77.1	104.5	108.2	111.9	111.9
95°	181.6	216.5	222.7	222.7	216.5
97.5°	302.2	334.6	348.3	348.3	348.3
100°	441.6	470.2	480.1	480.1	476.4
102.5°	588.3	609.5	623.1	626.9	623.1
105°	748.8	758.7	766.2	772.4	772.4
107.5°	908.0	922.9	922.9	925.4	908.0
110°	1062.3	1082.1	1082.1	1082.1	1072.2

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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	1228.9	1250.1	1246.3	1236.4	1228.9
115°	1393.1	1413.0	1406.8	1403.0	1393.1
117.5°	1556.1	1583.4	1566.0	1556.1	1546.1
120°	1720.3	1747.6	1720.3	1720.3	1709.0
122.5°	1869.5	1904.4	1886.9	1877.0	1869.5
125°	2026.3	2057.3	2047.4	2036.2	2032.5
127.5°	2179.2	2217.8	2204.1	2189.2	2179.2
130°	2322.3	2367.1	2360.9	2353.4	2339.7
132.5°	2482.7	2517.6	2520.0	2502.6	2492.7
135°	2620.8	2659.3	2666.8	2663.1	2653.1
137.5°	2775.0	2806.1	2812.4	2809.8	2794.9
140°	2910.6	2941.7	2959.1	2959.1	2945.4
142.5°	3049.9	3081.0	3091.0	3094.7	3081.0
145°	3181.8	3206.6	3226.5	3230.3	3216.6
147.5°	3299.9	3331.1	3346.0	3352.2	3338.5
150°	3421.8	3443.0	3456.7	3467.9	3456.7
152.5°	3530.1	3551.2	3568.6	3582.3	3568.6
155°	3638.3	3648.2	3659.4	3676.8	3665.7
157.5°	3731.5	3739.0	3745.2	3770.1	3752.7
160°	3814.9	3822.4	3826.1	3847.2	3832.3
162.5°	3892.0	3892.0	3895.7	3919.4	3901.9
165°	3957.9	3954.2	3954.2	3979.1	3961.7
167.5°	4017.6	4006.5	4006.5	4031.3	4013.9
170°	4062.4	4052.4	4048.8	4073.6	4052.4
172.5°	4093.5	4083.6	4079.8	4104.7	4083.6
175°	4118.4	4108.5	4101.0	4125.9	4104.7
177.5°	4132.1	4122.1	4114.6	4135.8	4114.6
180°	4125.9	4125.9	4125.9	4125.9	4125.9

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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	9.45	10.20	10.49	11.25	12.66	5.41	6.16	6.46	7.21	8.62
	3H	11.12	11.80	12.18	12.85	14.29	6.59	7.27	7.65	8.32	9.75
	4H	11.73	12.37	12.80	13.43	14.87	7.04	7.68	8.11	8.74	10.17
	6H	12.15	12.74	13.23	13.80	15.25	7.36	7.94	8.43	9.01	10.46
	8H	12.28	12.84	13.36	13.92	15.36	7.45	8.00	8.53	9.08	10.53
	12H	12.34	12.87	13.43	13.94	15.41	7.49	8.02	8.57	9.09	10.56
4H	2H	9.46	10.10	10.53	11.15	12.59	6.00	6.64	7.07	7.69	9.13
	3H	11.28	11.82	12.37	12.90	14.35	7.34	7.87	8.42	8.96	10.41
	4H	11.98	12.46	13.06	13.54	15.01	7.89	8.37	8.97	9.45	10.92
	6H	12.49	12.91	13.59	14.01	15.47	8.30	8.72	9.40	9.82	11.29
	8H	12.67	13.06	13.76	14.15	15.63	8.43	8.82	9.53	9.91	11.39
	12H	12.76	13.11	13.87	14.22	15.70	8.49	8.85	9.61	9.95	11.44
8H	4H	11.94	12.33	13.03	13.42	14.90	8.16	8.55	9.26	9.64	11.13
	6H	12.51	12.83	13.62	13.96	15.44	8.68	9.00	9.80	10.14	11.61
	8H	12.73	13.01	13.85	14.12	15.62	8.87	9.15	10.00	10.27	11.77
	12H	12.86	13.11	13.99	14.22	15.76	8.99	9.24	10.12	10.35	11.88
12H	4H	11.89	12.24	13.00	13.34	14.83	8.17	8.52	9.28	9.62	11.11
	6H	12.48	12.76	13.61	13.88	15.38	8.73	9.01	9.85	10.13	11.63
	8H	12.70	12.95	13.83	14.06	15.60	8.94	9.19	10.07	10.30	11.83