

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: P917785

Luminaire Tested: DFN2DIP-SQ4F0-110D140US930-FLLONL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P917785
REPORT IS A COMBINATION OF REPORTS P901715 AND P898471
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-SQ4F0-110D140US930-FLLONL
Description: 4 foot, Square Define Geo, with Direct Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

Summary

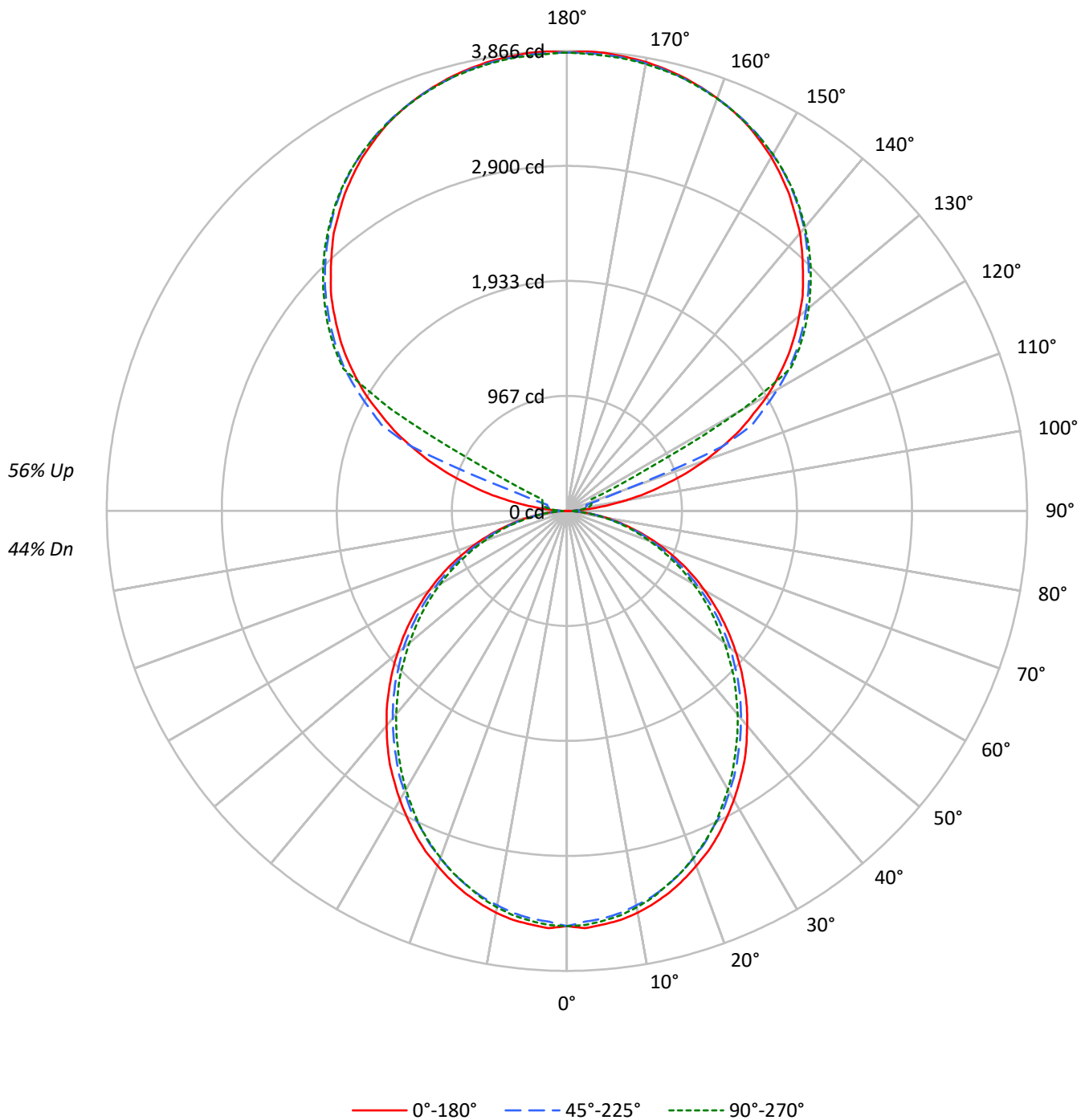
Lumens per Lamp: N/A
Luminaire Lumens: 20178.6 lumens
Efficiency: N/A
Efficacy: 95.7 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.92' x L: 3.92' x H: 0.1')
CIE Type: General Diffuse

Input Watts (W): 210.9
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					0
RW	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	50	30	10
RCR																				
0	106	106	106	106	97	97	97	97	80	80	80	65	65	65	51	51	51	44		
1	96	92	88	85	88	84	81	78	70	68	66	57	55	54	45	44	43	37		
2	88	80	74	69	80	74	69	64	61	58	54	50	47	45	39	38	36	31		
3	80	71	63	58	73	65	59	54	54	50	46	44	41	38	35	33	31	26		
4	73	63	55	49	67	58	51	45	48	43	39	39	36	33	31	29	26	23		
5	67	56	48	42	61	51	44	39	43	38	34	35	31	28	28	25	23	20		
6	62	50	42	36	56	46	39	34	39	33	29	32	28	25	25	23	20	17		
7	57	45	37	32	52	42	35	30	35	30	26	29	25	22	23	20	18	15		
8	53	41	33	28	48	38	31	26	32	27	23	27	22	19	21	18	16	14		
9	49	37	30	25	45	35	28	23	29	24	20	24	20	17	20	17	15	12		
10	46	34	27	22	42	32	25	21	27	22	18	23	19	16	18	15	13	11		

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: 2067 cd/sqm

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	328.4	1.6
10°-20°	924.1	4.6
20°-30°	1358.1	6.7
30°-40°	1577.3	7.8
40°-50°	1575.4	7.8
50°-60°	1373.7	6.8
60°-70°	1015.5	5.0
70°-80°	574.5	2.8
80°-90°	158.4	0.8
90°-100°	127.0	0.6
100°-110°	473.5	2.3
110°-120°	1255.8	6.2
120°-130°	2082.9	10.3
130°-140°	2212.5	11.0
140°-150°	2056.3	10.2
150°-160°	1653.2	8.2
160°-170°	1065.3	5.3
170°-180°	366.7	1.8
0°-30°	2610.6	12.9
0°-40°	4187.9	20.8
0°-60°	7137.0	35.4
0°-90°	8885.4	44.0
90°-120°	1856.4	9.2
90°-150°	8208.1	40.7
90°-180°	11293.0	56.0
0°-180°	20178.6	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	33	56	70	75	19
95°	181	89	109	123	120	214
105°	847	931	170	201	212	905
115°	1603	1650	1720	429	229	1578
125°	2266	2302	2355	2375	2383	2021
135°	2804	2849	2874	2902	2896	2166
145°	3253	3250	3297	3317	3303	2035
155°	3582	3557	3590	3607	3585	1650
165°	3774	3758	3766	3785	3766	1066
175°	3860	3841	3846	3866	3838	367
180°	3852	3852	3852	3852	3852	

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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°	2.6	33.4	55.6	69.9	75.2
92.5°	69.9	58.6	66.9	72.5	75.2
95°	181.1	89.0	108.6	122.8	119.8
97.5°	326.0	97.7	142.0	150.6	153.3
100°	493.5	111.5	158.9	181.1	186.7
102.5°	677.2	671.9	164.5	194.9	203.6
105°	847.3	931.1	170.2	200.6	211.8
107.5°	1045.3	1114.8	175.8	206.2	217.4
110°	1234.9	1293.2	487.9	209.2	220.1

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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	1413.3	1463.3	1416.0	214.5	223.1
115°	1602.7	1650.0	1719.9	429.3	228.7
117.5°	1767.2	1822.8	1870.5	1471.6	741.4
120°	1951.3	1992.9	2043.2	2076.6	1700.3
122.5°	2107.1	2151.8	2207.7	2224.3	2227.3
125°	2266.0	2302.4	2355.4	2374.9	2383.2
127.5°	2411.0	2450.1	2492.0	2519.8	2522.5
130°	2547.6	2592.4	2622.8	2653.6	2650.9
132.5°	2687.1	2723.4	2753.9	2779.0	2776.4
135°	2804.2	2848.9	2873.7	2901.8	2896.2
137.5°	2926.7	2960.1	2988.2	3016.0	3007.8
140°	3046.5	3069.0	3099.4	3124.6	3110.7
142.5°	3147.1	3166.6	3202.7	3224.9	3211.0
145°	3253.0	3250.0	3297.4	3317.0	3303.0
147.5°	3344.8	3336.4	3383.8	3397.7	3386.7
150°	3434.1	3414.6	3459.2	3475.8	3461.9
152.5°	3509.2	3487.0	3528.8	3545.7	3526.1
155°	3581.7	3556.9	3590.3	3606.9	3584.7
157.5°	3640.3	3618.1	3643.3	3662.8	3640.3
160°	3690.6	3673.7	3690.6	3707.2	3687.7
162.5°	3735.0	3718.4	3732.4	3751.8	3726.7
165°	3774.0	3757.5	3765.8	3785.3	3765.8
167.5°	3804.8	3788.0	3796.5	3816.1	3790.9
170°	3829.9	3813.1	3818.7	3838.3	3813.1
172.5°	3846.5	3829.9	3835.6	3855.1	3829.9
175°	3860.4	3840.9	3846.5	3866.1	3838.3
177.5°	3866.1	3846.5	3849.5	3869.0	3843.9
180°	3852.1	3852.1	3852.1	3852.1	3852.1

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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	9.82	10.63	10.82	11.65	13.00	9.37	10.18	10.38	11.20	12.55
	3H	11.48	12.21	12.50	13.23	14.61	10.99	11.71	12.01	12.74	14.11
	4H	12.07	12.76	13.10	13.78	15.17	11.57	12.26	12.60	13.29	14.67
	6H	12.47	13.10	13.51	14.13	15.53	11.97	12.60	13.01	13.63	15.03
	8H	12.57	13.18	13.62	14.23	15.62	12.07	12.67	13.12	13.72	15.11
	12H	12.62	13.19	13.67	14.24	15.65	12.11	12.68	13.16	13.73	15.14
4H	2H	10.27	10.96	11.31	11.99	13.37	9.92	10.61	10.95	11.64	13.02
	3H	12.14	12.71	13.18	13.77	15.17	11.73	12.31	12.78	13.36	14.76
	4H	12.85	13.38	13.91	14.43	15.85	12.43	12.96	13.48	14.01	15.42
	6H	13.37	13.82	14.43	14.90	16.31	12.94	13.39	14.00	14.46	15.88
	8H	13.52	13.94	14.58	15.01	16.44	13.08	13.51	14.15	14.57	16.00
	12H	13.59	13.98	14.67	15.06	16.49	13.15	13.53	14.22	14.61	16.04
8H	4H	13.05	13.47	14.11	14.53	15.96	12.67	13.09	13.73	14.16	15.59
	6H	13.68	14.03	14.77	15.14	16.56	13.30	13.65	14.38	14.75	16.18
	8H	13.90	14.21	15.00	15.30	16.75	13.51	13.82	14.60	14.91	16.35
	12H	14.04	14.31	15.13	15.39	16.88	13.63	13.90	14.72	14.98	16.46
12H	4H	13.03	13.41	14.11	14.49	15.92	12.66	13.05	13.74	14.12	15.56
	6H	13.71	14.02	14.80	15.11	16.55	13.34	13.65	14.43	14.74	16.18
	8H	13.95	14.22	15.05	15.31	16.79	13.57	13.84	14.67	14.93	16.41