

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: P927156

Luminaire Tested: DFN2DIP-HX4F0-110D120US830-FLLONL

Issue Date: 12/12/2024

Test Information

Test Method: LM-79-2019
Report Number: P927156
REPORT IS A COMBINATION OF REPORTS P900977 AND P896187
Test Lab: INNOVATION CENTER
Issue Date: 12/12/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-HX4F0-110D120US830-FLLONL
Description: 4 foot, Hexagon Define Geo, with Direct Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

Summary

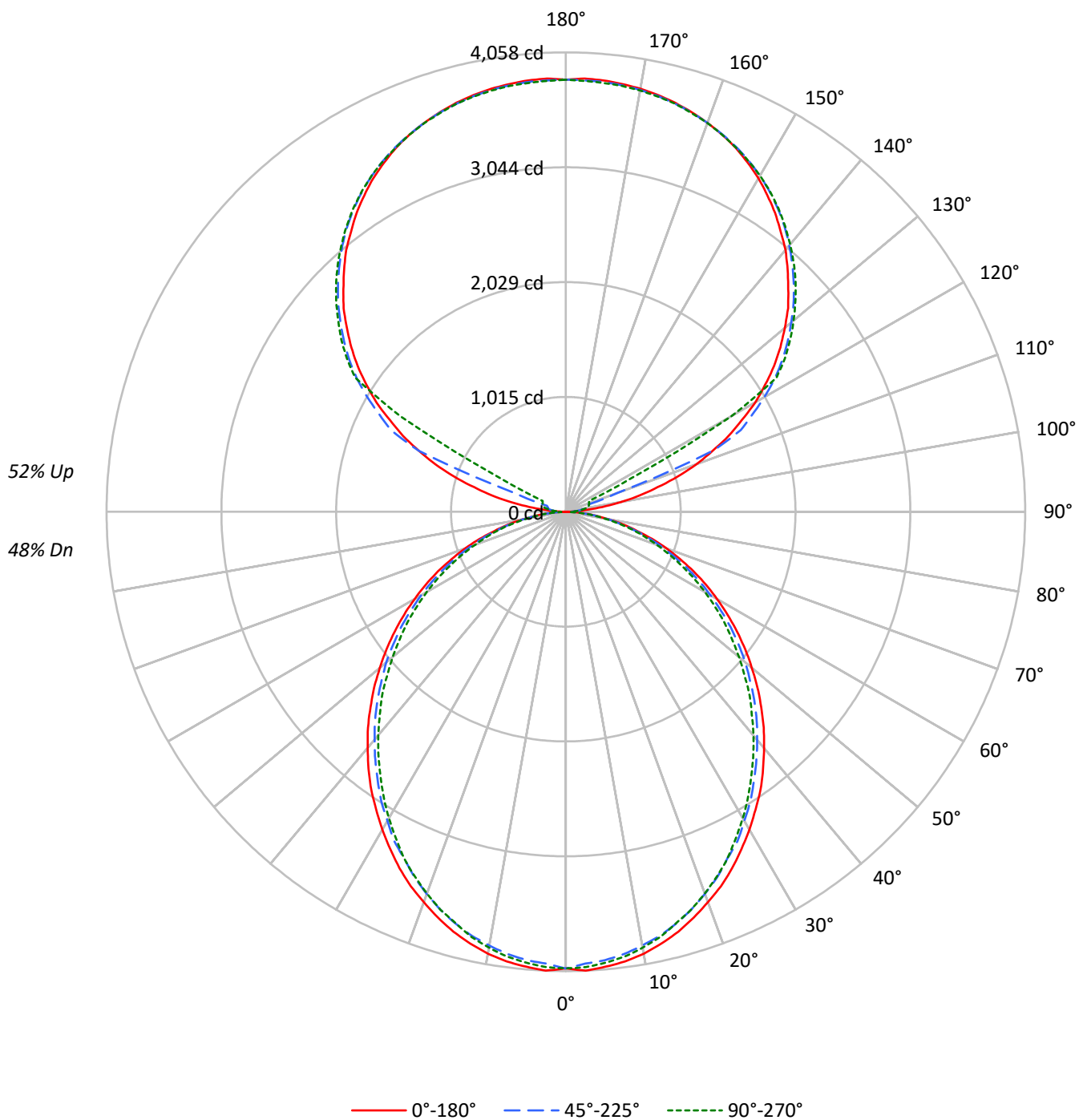
Lumens per Lamp: N/A
Luminaire Lumens: 21460.7 lumens
Efficiency: N/A
Efficacy: 103.1 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.54' x L: 4.09' x H: 0.1')
CIE Type: General Diffuse

Input Watts (W): 208.2
Input Voltage (V):
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.9967
Total Harmonic Distortion (THDi): 0.063
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	107	107	107	107	98	98	98	98	82	82	82	68	68	68	54	54	54
1	97	93	89	86	89	86	82	79	72	70	67	59	58	56	48	47	46
2	89	81	75	70	81	75	70	65	63	59	56	52	49	47	42	40	39
3	81	71	64	58	74	66	60	54	56	51	47	46	43	40	37	35	33
4	74	63	55	49	68	58	51	46	49	44	40	41	37	34	33	31	28
5	68	56	48	42	62	52	45	40	44	39	34	37	33	30	30	27	25
6	62	50	42	37	57	47	40	34	40	34	30	33	29	26	27	24	22
7	58	46	38	32	53	42	35	30	36	31	26	30	26	23	25	22	19
8	54	41	34	28	49	38	32	27	33	27	24	28	23	20	23	20	17
9	50	38	30	25	46	35	28	24	30	25	21	26	21	18	21	18	16
10	47	35	27	23	43	32	26	21	28	23	19	24	19	17	20	16	14

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	3000	3000	3000
5°	3005	2958	2978
10°	2980	2919	2938
15°	2937	2871	2875
20°	2878	2804	2811
25°	2819	2725	2736
30°	2746	2651	2641
35°	2676	2563	2541
40°	2590	2475	2446
45°	2505	2387	2349
50°	2411	2294	2236
55°	2313	2187	2132
60°	2202	2059	2013
65°	2082	1928	1873
70°	1928	1767	1722
75°	1715	1575	1583
80°	1459	1330	1317
85°	1059	906	876

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°
Vertical Angle: 45°
Luminance: 2505 cd/sqm

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	379.7	1.8
10°-20°	1068.3	5.0
20°-30°	1570.0	7.3
30°-40°	1823.4	8.5
40°-50°	1821.2	8.5
50°-60°	1588.0	7.4
60°-70°	1173.9	5.5
70°-80°	664.1	3.1
80°-90°	182.0	0.8
90°-100°	125.9	0.6
100°-110°	469.2	2.2
110°-120°	1244.4	5.8
120°-130°	2063.9	9.6
130°-140°	2192.3	10.2
140°-150°	2037.5	9.5
150°-160°	1638.1	7.6
160°-170°	1055.6	4.9
170°-180°	363.3	1.7
0°-30°	3017.9	14.1
0°-40°	4841.4	22.6
0°-60°	8250.5	38.4
0°-90°	10270.5	47.9
90°-120°	1839.4	8.6
90°-150°	8133.2	37.9
90°-180°	11190.0	52.1
0°-180°	21460.7	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	4034	4034	4034	4034	4034	
5°	4034	4019	3976	4007	4000	383
15°	3840	3817	3766	3782	3763	1082
25°	3476	3445	3379	3386	3379	1599
35°	2999	2960	2898	2874	2855	1872
45°	2440	2413	2354	2312	2296	1883
55°	1847	1823	1777	1730	1711	1651
65°	1245	1222	1183	1148	1129	1231
75°	652	644	624	601	609	695
85°	159	155	152	140	136	177
90°	3	33	55	69	74	20
95°	179	88	108	122	119	212
105°	840	923	169	199	210	897
115°	1588	1635	1704	425	227	1563
125°	2245	2281	2334	2353	2361	2003
135°	2779	2823	2848	2875	2870	2146
145°	3223	3220	3267	3287	3273	2016
155°	3549	3524	3558	3574	3552	1635
165°	3740	3723	3731	3751	3731	1057
175°	3825	3806	3811	3831	3803	364
180°	3817	3817	3817	3817	3817	

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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	4034.1	4034.1	4034.1	4034.1	4034.1
2.5°	4057.5	4038.1	3995.4	4034.1	4026.6
5°	4034.1	4018.8	3976.0	4006.9	3999.5
7.5°	4006.9	3983.9	3941.1	3972.4	3964.5
10°	3964.5	3937.3	3890.8	3921.6	3910.1
12.5°	3906.1	3883.0	3836.5	3855.9	3848.0
15°	3840.2	3817.1	3766.5	3782.2	3762.8
17.5°	3758.7	3735.7	3685.1	3704.4	3685.1
20°	3669.4	3646.3	3592.1	3603.6	3588.4
22.5°	3580.6	3545.5	3494.9	3494.9	3487.1
25°	3475.6	3444.7	3378.9	3386.3	3378.9
27.5°	3359.1	3331.9	3281.7	3270.2	3250.9
30°	3243.0	3211.8	3153.7	3142.2	3126.6
32.5°	3118.7	3095.7	3033.5	3010.1	2994.4
35°	2998.6	2959.9	2897.7	2874.2	2854.9
37.5°	2862.7	2827.8	2765.7	2738.4	2719.1
40°	2723.3	2692.0	2629.9	2595.3	2579.6
42.5°	2587.4	2556.2	2494.4	2455.3	2432.3
45°	2440.1	2412.9	2354.5	2312.1	2296.5
47.5°	2296.5	2269.4	2207.1	2164.4	2141.3
50°	2145.0	2125.7	2071.3	2017.0	1997.7
52.5°	1997.7	1970.5	1920.3	1877.5	1850.3
55°	1846.6	1823.2	1776.7	1730.1	1710.8
57.5°	1695.2	1675.9	1625.2	1578.7	1563.0
60°	1543.7	1528.5	1474.2	1431.4	1419.9
62.5°	1396.4	1369.3	1330.5	1291.9	1276.2
65°	1245.3	1221.9	1183.2	1148.2	1128.9
67.5°	1090.2	1070.5	1035.9	1008.8	993.1
70°	946.6	930.9	895.9	868.8	853.5
72.5°	799.2	783.6	764.3	737.1	725.5
75°	651.5	644.1	624.3	601.3	609.1
77.5°	519.8	504.1	496.3	484.8	473.3
80°	388.1	384.0	376.2	364.7	356.8
82.5°	263.8	263.8	260.1	244.5	244.5
85°	158.9	155.1	151.5	139.5	135.8
87.5°	69.9	62.1	54.3	42.8	38.6
90°	2.6	33.1	55.1	69.2	74.5
92.5°	69.2	58.1	66.3	71.8	74.5
95°	179.4	88.2	107.5	121.7	118.8
97.5°	323.1	96.8	140.7	149.2	151.8
100°	489.0	110.6	157.4	179.4	185.0
102.5°	671.1	665.8	163.0	193.2	201.7
105°	839.6	922.6	168.6	198.8	209.9
107.5°	1035.7	1104.6	174.2	204.3	215.5
110°	1223.6	1281.4	483.4	207.3	218.1

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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	1400.5	1449.9	1403.1	212.5	221.0
115°	1588.0	1635.0	1704.1	425.4	226.7
117.5°	1751.1	1806.2	1853.4	1458.1	734.7
120°	1933.4	1974.7	2024.6	2057.8	1684.8
122.5°	2087.9	2132.2	2187.6	2204.0	2207.0
125°	2245.3	2281.4	2333.9	2353.2	2361.4
127.5°	2389.0	2427.7	2469.4	2496.9	2499.5
130°	2524.4	2568.7	2598.8	2629.4	2626.7
132.5°	2662.5	2698.6	2728.7	2753.7	2751.1
135°	2778.6	2822.9	2847.5	2875.4	2869.8
137.5°	2900.0	2933.1	2961.0	2988.5	2980.3
140°	3018.7	3041.0	3071.1	3096.1	3082.4
142.5°	3118.4	3137.8	3173.5	3195.5	3181.7
145°	3223.4	3220.4	3267.3	3286.7	3272.8
147.5°	3314.2	3306.0	3352.9	3366.7	3355.9
150°	3402.7	3383.4	3427.7	3444.1	3430.3
152.5°	3477.2	3455.2	3496.6	3513.3	3493.9
155°	3549.0	3524.4	3557.6	3574.0	3552.0
157.5°	3607.0	3585.1	3610.1	3629.4	3607.0
160°	3656.9	3640.2	3656.9	3673.3	3654.0
162.5°	3700.9	3684.5	3698.3	3717.6	3692.7
165°	3739.6	3723.2	3731.4	3750.8	3731.4
167.5°	3770.1	3753.3	3761.9	3781.2	3756.3
170°	3795.0	3778.3	3783.9	3803.2	3778.3
172.5°	3811.4	3795.0	3800.6	3820.0	3795.0
175°	3825.1	3805.8	3811.4	3830.8	3803.2
177.5°	3830.8	3811.4	3814.4	3833.7	3808.8
180°	3817.0	3817.0	3817.0	3817.0	3817.0

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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	10.89	11.73	11.86	12.72	14.02	10.46	11.30	11.43	12.29	13.59
	3H	12.55	13.30	13.53	14.30	15.62	12.07	12.83	13.06	13.83	15.15
	4H	13.13	13.85	14.13	14.85	16.18	12.66	13.38	13.66	14.38	15.71
	6H	13.53	14.19	14.54	15.20	16.54	13.06	13.72	14.07	14.72	16.07
	8H	13.64	14.27	14.66	15.29	16.63	13.16	13.79	14.18	14.81	16.15
	12H	13.69	14.28	14.71	15.30	16.67	13.21	13.80	14.23	14.82	16.18
4H	2H	11.35	12.06	12.35	13.06	14.40	11.00	11.72	12.01	12.72	14.05
	3H	13.21	13.81	14.23	14.84	16.19	12.82	13.42	13.83	14.45	15.79
	4H	13.93	14.47	14.95	15.50	16.86	13.52	14.07	14.54	15.09	16.46
	6H	14.44	14.91	15.48	15.96	17.32	14.03	14.50	15.07	15.55	16.91
	8H	14.59	15.03	15.63	16.07	17.45	14.18	14.62	15.21	15.66	17.04
	12H	14.66	15.06	15.72	16.12	17.50	14.24	14.64	15.30	15.69	17.08
8H	4H	14.12	14.56	15.16	15.60	16.98	13.76	14.20	14.80	15.24	16.62
	6H	14.76	15.12	15.81	16.20	17.58	14.39	14.76	15.45	15.84	17.21
	8H	14.98	15.30	16.04	16.36	17.76	14.61	14.93	15.67	15.99	17.39
	12H	15.11	15.39	16.18	16.45	17.89	14.72	15.00	15.79	16.06	17.50
12H	4H	14.11	14.51	15.16	15.56	16.94	13.76	14.15	14.81	15.21	16.59
	6H	14.79	15.10	15.85	16.17	17.57	14.43	14.75	15.50	15.82	17.21
	8H	15.03	15.31	16.10	16.37	17.81	14.67	14.95	15.74	16.01	17.45

END OF REPORT