

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: P927148

Luminaire Tested: DFN2DIP-HX4F0-110D100US830-FLLONL

Issue Date: 12/12/2024

Test Information

Test Method: LM-79-2019
Report Number: P927148
REPORT IS A COMBINATION OF REPORTS P900941 AND P896187
Test Lab: INNOVATION CENTER
Issue Date: 12/12/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-HX4F0-110D100US830-FLLONL
Description: 4 foot, Hexagon Define Geo, with Direct Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

Summary

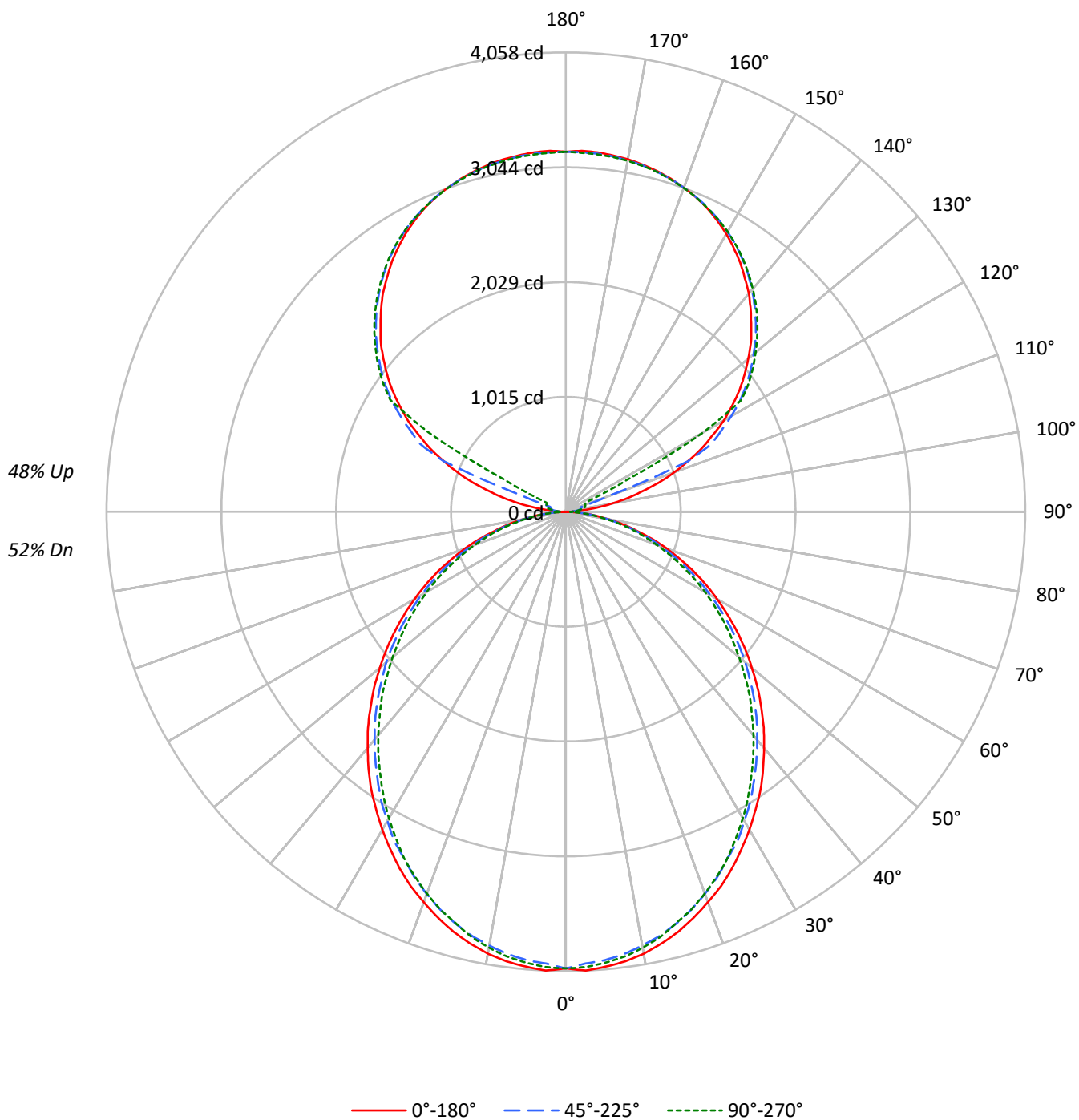
Lumens per Lamp: N/A
Luminaire Lumens: 19594.6 lumens
Efficiency: N/A
Efficacy: 104.0 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.54' x L: 4.09' x H: 0.1')
CIE Type: General Diffuse

Input Watts (W): 188.4
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	108	108	108	108	100	100	100	100	85	85	85	71	71	71	58	58	58
1	98	94	90	87	91	87	84	81	74	72	70	62	61	59	52	50	49
2	90	82	76	71	83	76	71	66	65	61	58	55	52	49	45	43	42
3	82	72	65	59	75	67	61	55	57	53	48	49	45	42	40	38	35
4	75	64	56	50	69	59	52	47	51	46	41	43	39	36	36	33	30
5	69	57	49	43	63	53	46	40	46	40	36	39	34	31	32	29	27
6	63	51	43	37	58	48	40	35	41	35	31	35	31	27	29	26	23
7	58	46	38	33	54	43	36	31	37	32	27	32	27	24	27	23	21
8	54	42	34	29	50	39	32	27	34	28	24	29	25	22	25	21	19
9	51	38	31	26	47	36	29	24	31	26	22	27	22	19	23	19	17
10	47	35	28	23	44	33	26	22	29	23	20	25	21	18	21	18	15

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	1.9
10°-20°	1068.3	5.5
20°-30°	1570.0	8.0
30°-40°	1823.4	9.3
40°-50°	1821.2	9.3
50°-60°	1588.0	8.1
60°-70°	1173.9	6.0
70°-80°	664.1	3.4
80°-90°	180.9	0.9
90°-100°	104.9	0.5
100°-110°	391.0	2.0
110°-120°	1037.0	5.3
120°-130°	1719.9	8.8
130°-140°	1827.0	9.3
140°-150°	1697.9	8.7
150°-160°	1365.1	7.0
160°-170°	879.6	4.5
170°-180°	302.8	1.5
0°-30°	3017.9	15.4
0°-40°	4841.4	24.7
0°-60°	8250.5	42.1
0°-90°	10269.4	52.4
90°-120°	1532.9	7.8
90°-150°	6777.7	34.6
90°-180°	9325.0	47.6
0°-180°	19594.6	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°	2	28	46	58	62	18
95°	150	74	90	101	99	177
105°	700	769	140	166	175	748
115°	1323	1362	1420	354	189	1303
125°	1871	1901	1945	1961	1968	1669
135°	2316	2352	2373	2396	2392	1789
145°	2686	2684	2723	2739	2727	1680
155°	2958	2937	2965	2978	2960	1363
165°	3116	3103	3110	3126	3110	880
175°	3188	3172	3176	3192	3169	303
180°	3181	3181	3181	3181	3181	

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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°	2.2	27.6	45.9	57.7	62.0
92.5°	57.7	48.4	55.2	59.8	62.0
95°	149.5	73.5	89.6	101.4	99.0
97.5°	269.2	80.6	117.2	124.3	126.6
100°	407.5	92.1	131.2	149.5	154.2
102.5°	559.2	554.8	135.8	161.0	168.0
105°	699.7	768.8	140.5	165.6	174.9
107.5°	863.1	920.5	145.1	170.3	179.5
110°	1019.7	1067.9	402.8	172.8	181.7

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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	1167.0	1208.3	1169.3	177.1	184.3
115°	1323.4	1362.5	1420.2	354.5	188.9
117.5°	1459.2	1505.2	1544.5	1215.2	612.2
120°	1611.2	1645.6	1687.2	1714.8	1404.0
122.5°	1739.9	1776.8	1823.0	1836.6	1839.1
125°	1871.1	1901.2	1944.9	1961.1	1967.8
127.5°	1990.8	2023.1	2057.8	2080.8	2082.9
130°	2103.7	2140.6	2165.8	2191.1	2189.0
132.5°	2218.7	2248.8	2274.0	2294.7	2292.5
135°	2315.5	2352.4	2372.9	2396.1	2391.5
137.5°	2416.7	2444.3	2467.5	2490.5	2483.6
140°	2515.5	2534.2	2559.3	2580.1	2568.6
142.5°	2598.7	2614.8	2644.6	2662.8	2651.4
145°	2686.1	2683.7	2722.8	2738.9	2727.4
147.5°	2761.8	2755.0	2794.0	2805.5	2796.6
150°	2835.6	2819.5	2856.4	2870.1	2858.6
152.5°	2897.6	2879.3	2913.8	2927.7	2911.6
155°	2957.6	2937.0	2964.6	2978.3	2960.0
157.5°	3005.9	2987.6	3008.4	3024.5	3005.9
160°	3047.5	3033.5	3047.5	3061.1	3045.0
162.5°	3084.0	3070.4	3081.9	3098.0	3077.3
165°	3116.3	3102.6	3109.5	3125.6	3109.5
167.5°	3141.7	3127.8	3134.9	3151.1	3130.2
170°	3162.5	3148.6	3153.2	3169.3	3148.6
172.5°	3176.1	3162.5	3167.2	3183.3	3162.5
175°	3187.6	3171.5	3176.1	3192.3	3169.3
177.5°	3192.3	3176.1	3178.7	3194.8	3174.0
180°	3180.8	3180.8	3180.8	3180.8	3180.8

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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	11.31	12.19	12.25	13.15	14.38	10.88	11.76	11.81	12.71	13.95
	3H	12.97	13.77	13.92	14.73	15.99	12.50	13.29	13.45	14.25	15.51
	4H	13.56	14.31	14.52	15.28	16.55	13.09	13.84	14.05	14.80	16.07
	6H	13.96	14.65	14.94	15.63	16.91	13.49	14.18	14.46	15.15	16.43
	8H	14.07	14.73	15.05	15.72	17.00	13.59	14.25	14.57	15.24	16.52
	12H	14.12	14.74	15.10	15.73	17.03	13.64	14.26	14.62	15.25	16.55
4H	2H	11.77	12.52	12.74	13.49	14.76	11.43	12.18	12.40	13.15	14.41
	3H	13.64	14.27	14.62	15.27	16.55	13.25	13.88	14.23	14.87	16.16
	4H	14.36	14.93	15.35	15.92	17.23	13.95	14.53	14.94	15.52	16.82
	6H	14.88	15.37	15.88	16.38	17.69	14.47	14.96	15.47	15.97	17.28
	8H	15.03	15.49	16.03	16.50	17.81	14.62	15.08	15.62	16.08	17.40
	12H	15.10	15.52	16.12	16.54	17.87	14.68	15.10	15.70	16.12	17.44
8H	4H	14.56	15.02	15.56	16.03	17.35	14.20	14.66	15.20	15.67	16.98
	6H	15.19	15.57	16.22	16.62	17.94	14.83	15.21	15.85	16.26	17.58
	8H	15.41	15.75	16.45	16.78	18.12	15.04	15.38	16.08	16.42	17.75
	12H	15.55	15.84	16.58	16.87	18.25	15.16	15.46	16.20	16.49	17.87
12H	4H	14.55	14.96	15.56	15.98	17.31	14.19	14.61	15.21	15.63	16.96
	6H	15.22	15.56	16.26	16.59	17.93	14.87	15.21	15.90	16.24	17.58
	8H	15.47	15.76	16.50	16.79	18.17	15.11	15.40	16.15	16.43	17.81