

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: P927112

Luminaire Tested: DFN2DIP-HX4F0-100D100US830-FLLONL

Issue Date: 12/12/2024

Test Information

Test Method: LM-79-2019
Report Number: P927112
REPORT IS A COMBINATION OF REPORTS P900939 AND P896187
Test Lab: INNOVATION CENTER
Issue Date: 12/12/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-HX4F0-100D100US830-FLLONL
Description: 4 foot, Hexagon Define Geo, with Direct Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

Summary

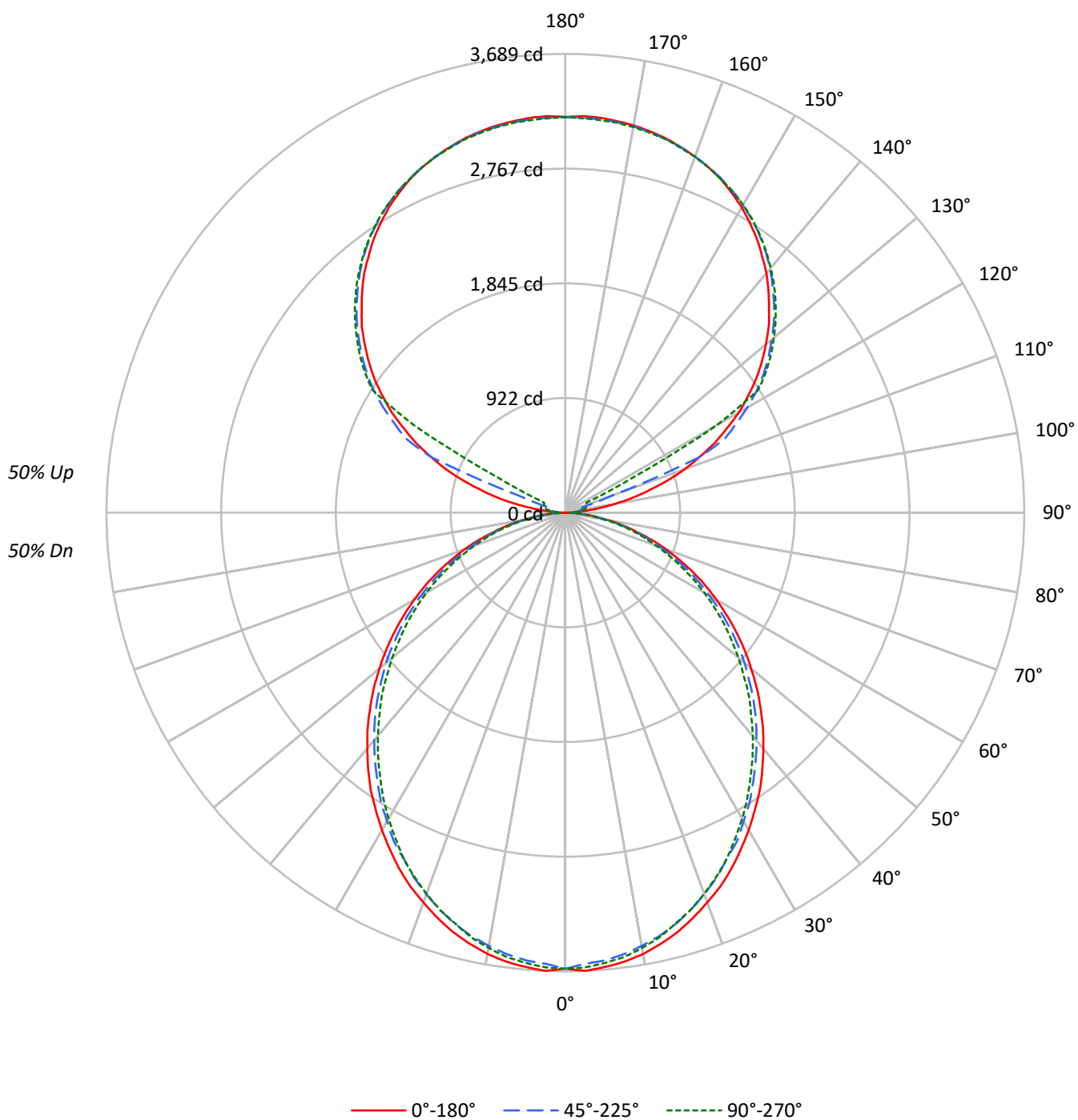
Lumens per Lamp: N/A
Luminaire Lumens: 18661.5 lumens
Efficiency: N/A
Efficacy: 106.3 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.54' x L: 4.09' x H: 0.1')
CIE Type: General Diffuse

Input Watts (W): 175.5
Input Voltage (V):
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.946
Total Harmonic Distortion (THDi): 0.132
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	107	107	107	107	99	99	99	99	83	83	83	69	69	69	56	56	56	56	56	56
1	98	93	90	86	90	86	83	80	73	71	68	61	59	58	50	48	47	47	47	42
2	89	82	75	70	82	76	70	66	64	60	57	53	51	48	44	42	40	40	40	35
3	81	72	64	59	75	66	60	55	56	52	48	47	44	41	39	36	34	34	34	30
4	74	64	56	50	68	59	52	47	50	45	41	42	38	35	35	32	29	29	29	26
5	68	57	48	42	63	53	45	40	45	39	35	38	34	30	31	28	26	26	26	22
6	63	51	43	37	58	47	40	35	40	35	31	34	30	27	28	25	23	23	23	20
7	58	46	38	32	53	43	36	30	37	31	27	31	27	23	26	23	20	20	20	17
8	54	42	34	29	50	39	32	27	33	28	24	28	24	21	24	20	18	18	18	16
9	50	38	30	25	46	35	29	24	31	25	21	26	22	19	22	19	16	16	16	14
10	47	35	28	23	43	33	26	22	28	23	19	24	20	17	20	17	15	15	15	13

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	2727	2727	2727
5°	2732	2689	2707
10°	2710	2653	2671
15°	2670	2610	2614
20°	2616	2549	2555
25°	2563	2477	2487
30°	2496	2410	2401
35°	2433	2330	2310
40°	2355	2250	2224
45°	2277	2170	2135
50°	2192	2086	2032
55°	2103	1988	1938
60°	2002	1872	1830
65°	1893	1753	1703
70°	1753	1606	1566
75°	1559	1432	1439
80°	1327	1209	1197
85°	963	824	797

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 2277 cd/sqm

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	345.2	1.8
10°-20°	971.2	5.2
20°-30°	1427.2	7.6
30°-40°	1657.6	8.9
40°-50°	1655.6	8.9
50°-60°	1443.6	7.7
60°-70°	1067.2	5.7
70°-80°	603.8	3.2
80°-90°	165.0	0.9
90°-100°	104.9	0.6
100°-110°	391.0	2.1
110°-120°	1037.0	5.6
120°-130°	1719.9	9.2
130°-140°	1827.0	9.8
140°-150°	1697.9	9.1
150°-160°	1365.1	7.3
160°-170°	879.6	4.7
170°-180°	302.8	1.6
0°-30°	2743.6	14.7
0°-40°	4401.2	23.6
0°-60°	7500.4	40.2
0°-90°	9336.4	50.0
90°-120°	1532.9	8.2
90°-150°	6777.7	36.3
90°-180°	9325.0	50.0
0°-180°	18661.5	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	3667	3667	3667	3667	3667	
5°	3667	3654	3615	3643	3636	348
15°	3491	3470	3424	3438	3421	983
25°	3160	3132	3072	3078	3072	1454
35°	2726	2691	2634	2613	2595	1702
45°	2218	2194	2140	2102	2088	1712
55°	1679	1658	1615	1573	1555	1501
65°	1132	1111	1076	1044	1026	1119
75°	592	586	568	547	554	632
85°	144	141	138	127	124	161
90°	2	28	46	58	62	17
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°	3667.4	3667.4	3667.4	3667.4	3667.4
2.5°	3688.7	3671.0	3632.1	3667.4	3660.6
5°	3667.4	3653.5	3614.6	3642.7	3635.9
7.5°	3642.7	3621.7	3582.7	3611.2	3604.1
10°	3604.1	3579.4	3537.1	3565.2	3554.7
12.5°	3551.0	3530.0	3487.7	3505.3	3498.2
15°	3491.1	3470.2	3424.1	3438.3	3420.8
17.5°	3417.0	3396.1	3350.0	3367.6	3350.0
20°	3335.8	3314.9	3265.5	3275.9	3262.1
22.5°	3255.0	3223.3	3177.2	3177.2	3170.1
25°	3159.6	3131.6	3071.7	3078.4	3071.7
27.5°	3053.7	3029.0	2983.4	2972.9	2955.3
30°	2948.2	2919.8	2867.0	2856.5	2842.3
32.5°	2835.2	2814.3	2757.8	2736.5	2722.2
35°	2726.0	2690.8	2634.3	2613.0	2595.4
37.5°	2602.5	2570.7	2514.2	2489.5	2471.9
40°	2475.7	2447.2	2390.7	2359.4	2345.1
42.5°	2352.2	2323.7	2267.7	2232.1	2211.2
45°	2218.3	2193.6	2140.4	2101.9	2087.7
47.5°	2087.7	2063.0	2006.5	1967.6	1946.6
50°	1950.0	1932.4	1883.0	1833.6	1816.1
52.5°	1816.1	1791.4	1745.7	1706.9	1682.2
55°	1678.8	1657.5	1615.2	1572.8	1555.3
57.5°	1541.1	1523.5	1477.5	1435.2	1421.0
60°	1403.4	1389.5	1340.1	1301.2	1290.8
62.5°	1269.5	1244.8	1209.6	1174.4	1160.2
65°	1132.1	1110.8	1075.7	1043.8	1026.3
67.5°	991.1	973.1	941.7	917.1	902.8
70°	860.5	846.3	814.5	789.8	776.0
72.5°	726.6	712.3	694.8	670.1	659.6
75°	592.3	585.6	567.6	546.6	553.7
77.5°	472.6	458.3	451.2	440.7	430.3
80°	352.8	349.1	341.9	331.5	324.4
82.5°	239.9	239.9	236.5	222.2	222.2
85°	144.4	141.1	137.7	126.9	123.5
87.5°	63.6	56.5	49.4	38.9	35.2
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	10.76	11.62	11.72	12.59	13.87	10.33	11.19	11.29	12.16	13.43
	3H	12.42	13.20	13.39	14.18	15.47	11.95	12.72	12.92	13.70	15.00
	4H	13.01	13.74	13.99	14.73	16.03	12.54	13.27	13.52	14.25	15.56
	6H	13.41	14.09	14.40	15.08	16.39	12.94	13.61	13.93	14.60	15.91
	8H	13.52	14.16	14.52	15.17	16.48	13.04	13.68	14.04	14.69	16.00
	12H	13.57	14.18	14.57	15.18	16.51	13.08	13.69	14.09	14.70	16.03
4H	2H	11.22	11.95	12.21	12.94	14.24	10.88	11.61	11.87	12.60	13.90
	3H	13.09	13.70	14.09	14.72	16.03	12.70	13.31	13.69	14.32	15.64
	4H	13.81	14.36	14.81	15.37	16.71	13.40	13.96	14.41	14.97	16.30
	6H	14.32	14.80	15.34	15.83	17.17	13.91	14.39	14.93	15.42	16.76
	8H	14.47	14.92	15.49	15.95	17.30	14.06	14.51	15.08	15.53	16.88
	12H	14.55	14.95	15.58	15.99	17.35	14.12	14.53	15.16	15.57	16.92
8H	4H	14.00	14.45	15.02	15.48	16.83	13.64	14.09	14.66	15.12	16.47
	6H	14.64	15.01	15.68	16.07	17.42	14.27	14.64	15.31	15.71	17.06
	8H	14.86	15.18	15.91	16.24	17.60	14.49	14.81	15.54	15.87	17.23
	12H	14.99	15.28	16.04	16.32	17.73	14.60	14.89	15.66	15.94	17.35
12H	4H	13.99	14.39	15.03	15.43	16.79	13.64	14.04	14.67	15.08	16.44
	6H	14.67	14.99	15.72	16.04	17.41	14.31	14.64	15.36	15.69	17.06
	8H	14.91	15.20	15.96	16.24	17.65	14.55	14.84	15.61	15.88	17.30