

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: P927150

Luminaire Tested: DFN2DIP-HX4F0-110D100US830-RLLONL

Issue Date: 12/12/2024

**Test Information**

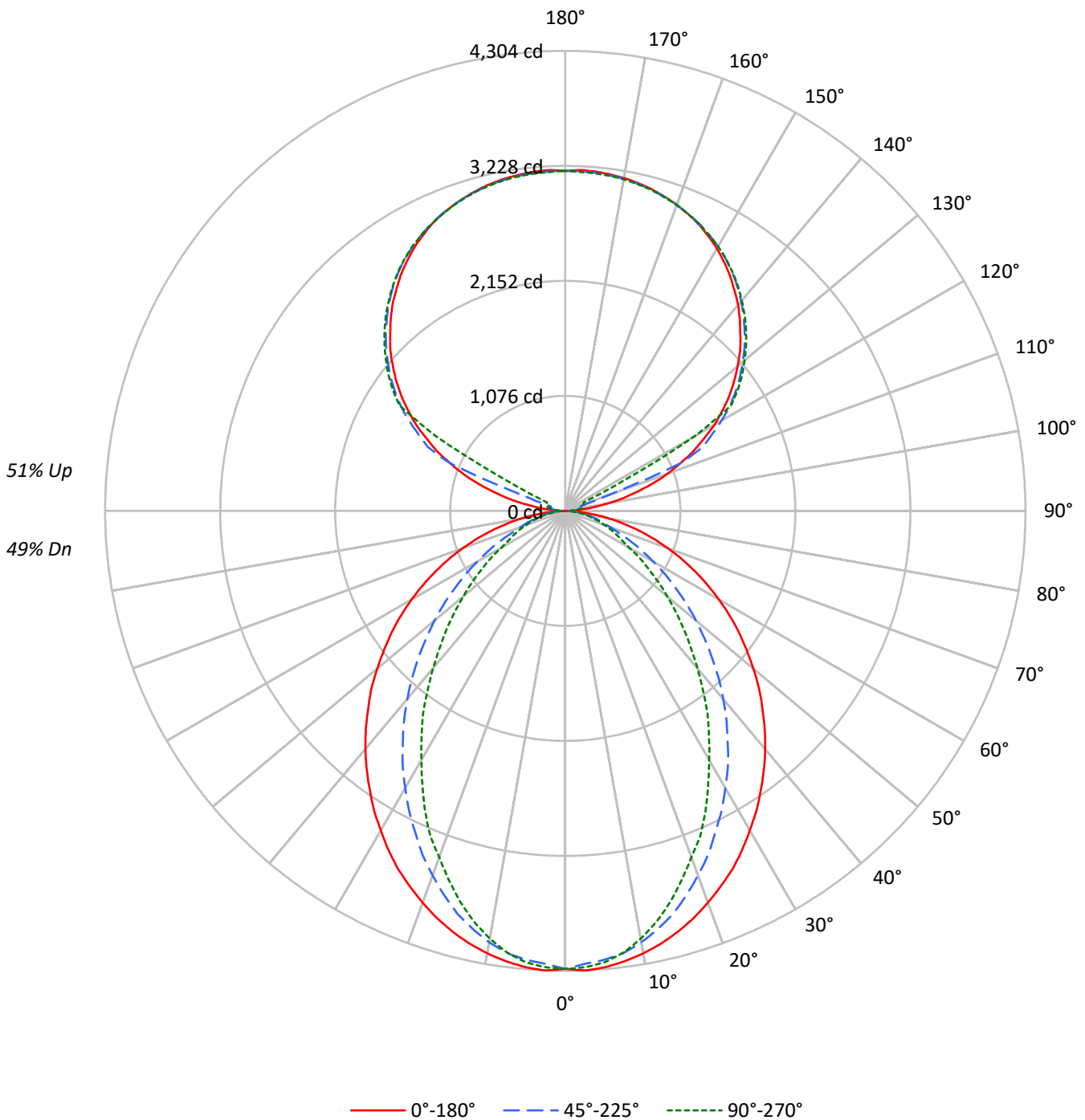
Test Method: LM-79-2019  
Report Number: P927150  
REPORT IS A COMBINATION OF REPORTS P900942 AND P896187  
Test Lab: INNOVATION CENTER  
Issue Date: 12/12/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-HX4F0-110D100US830-RLONL  
Description: 4 foot, Hexagon Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 18143.1 lumens  
Efficiency: N/A  
Efficacy: 96.3 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
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			0	
RW	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	50	30	10	0
RCR																					
0	107	107	107	107	98	98	98	98	83	83	83	68	68	68	55	55	55	49			49
1	98	94	90	87	90	87	83	81	73	71	69	61	59	58	49	48	47	42			42
2	90	82	77	72	82	76	71	67	65	61	58	54	51	49	44	42	40	36			36
3	82	73	66	60	75	68	61	56	57	53	49	48	45	42	39	37	35	31			31
4	75	65	57	51	69	60	53	48	51	46	42	43	39	36	35	33	31	27			27
5	69	58	50	44	64	54	47	42	46	41	37	39	35	32	32	29	27	24			24
6	64	52	44	39	59	49	42	36	42	36	32	35	31	28	29	26	24	21			21
7	59	47	39	34	55	44	37	32	38	33	29	32	28	25	27	24	21	19			19
8	55	43	35	30	51	40	33	29	35	29	26	30	25	22	25	22	19	17			17
9	51	39	32	27	47	37	30	26	32	27	23	27	23	20	23	20	18	15			15
10	48	36	29	24	44	34	27	23	29	24	21	25	21	18	21	18	16	14			14

**AVERAGE LUMINANCE (cd/sqm):**

	0°	45°	90°
0°	3186	3186	3186
5°	3191	3136	3156
10°	3160	3075	3053
15°	3117	2973	2895
20°	3060	2834	2700
25°	3001	2677	2512
30°	2922	2516	2273
35°	2845	2343	2064
40°	2766	2164	1824
45°	2675	1966	1606
50°	2580	1765	1393
55°	2482	1551	1189
60°	2368	1327	979
65°	2237	1099	881
70°	2078	887	798
75°	1878	782	726
80°	1589	657	630
85°	1111	440	475

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 2675 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	401.6	2.2
10°-20°	1102.4	6.1
20°-30°	1547.8	8.5
30°-40°	1687.2	9.3
40°-50°	1550.7	8.5
50°-60°	1217.8	6.7
60°-70°	792.7	4.4
70°-80°	408.0	2.2
80°-90°	109.8	0.6
90°-100°	104.9	0.6
100°-110°	391.0	2.2
110°-120°	1037.0	5.7
120°-130°	1719.9	9.5
130°-140°	1827.0	10.1
140°-150°	1697.9	9.4
150°-160°	1365.1	7.5
160°-170°	879.6	4.8
170°-180°	302.8	1.7
0°-30°	3051.8	16.8
0°-40°	4738.9	26.1
0°-60°	7507.5	41.4
0°-90°	8818.0	48.6
90°-120°	1532.9	8.4
90°-150°	6777.7	37.4
90°-180°	9325.0	51.4
0°-180°	18143.1	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	4285	4285	4285	4285	4285	
5°	4285	4266	4215	4250	4238	406
15°	4076	4033	3901	3827	3789	1148
25°	3699	3575	3319	3160	3102	1701
35°	3188	2990	2649	2404	2319	1995
45°	2606	2346	1939	1663	1570	2012
55°	1981	1679	1260	1028	954	1771
65°	1338	1024	675	543	531	1326
75°	713	442	310	283	279	755
85°	167	85	74	74	74	191
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°	4284.9	4284.9	4284.9	4284.9	4284.9
2.5°	4304.2	4284.9	4242.1	4281.2	4273.4
5°	4284.9	4265.6	4215.0	4249.9	4238.4
7.5°	4249.9	4226.8	4172.5	4187.8	4168.4
10°	4203.5	4176.2	4098.9	4087.0	4064.0
12.5°	4145.4	4110.4	4005.5	3982.4	3939.6
15°	4075.5	4032.7	3901.0	3827.4	3788.7
17.5°	3994.0	3931.9	3769.0	3683.8	3621.7
20°	3901.0	3823.3	3629.5	3532.8	3447.2
22.5°	3800.3	3710.9	3485.9	3354.3	3296.2
25°	3699.4	3575.2	3319.3	3160.5	3102.1
27.5°	3579.3	3447.2	3164.2	2981.9	2892.6
30°	3451.3	3303.7	2993.5	2795.9	2691.0
32.5°	3327.1	3148.5	2830.9	2598.1	2501.0
35°	3187.6	2989.7	2648.7	2404.3	2318.7
37.5°	3051.9	2838.3	2477.9	2210.1	2113.5
40°	2908.3	2675.9	2299.4	2024.1	1923.4
42.5°	2761.0	2512.9	2121.3	1834.1	1737.4
45°	2605.9	2345.9	1939.0	1663.3	1570.4
47.5°	2458.6	2183.4	1764.5	1488.9	1403.8
50°	2295.6	2020.4	1593.9	1326.0	1244.9
52.5°	2136.5	1845.6	1430.9	1175.0	1101.3
55°	1981.3	1679.0	1260.1	1027.7	954.1
57.5°	1822.6	1512.3	1109.1	892.0	829.8
60°	1659.6	1349.5	949.9	752.5	690.4
62.5°	1500.8	1190.7	814.2	628.3	597.4
65°	1337.9	1023.6	674.7	543.1	531.1
67.5°	1182.8	868.5	543.1	476.8	465.3
70°	1019.9	717.5	449.7	411.0	395.4
72.5°	864.7	577.7	376.1	345.1	337.3
75°	713.4	441.8	310.2	283.0	279.4
77.5°	562.4	313.9	244.4	228.7	220.9
80°	422.5	225.1	186.0	170.8	170.8
82.5°	294.5	151.4	128.0	120.2	120.2
85°	166.6	85.2	73.6	73.6	73.6
87.5°	62.1	30.8	30.8	27.1	27.1
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	11.04	11.86	12.02	12.85	14.14	7.02	7.83	7.99	8.82	10.11
	3H	12.72	13.45	13.71	14.45	15.76	8.20	8.94	9.19	9.93	11.25
	4H	13.33	14.02	14.33	15.02	16.34	8.66	9.35	9.66	10.35	11.67
	6H	13.75	14.39	14.76	15.39	16.73	8.98	9.61	9.99	10.62	11.95
	8H	13.88	14.48	14.89	15.50	16.83	9.07	9.67	10.09	10.69	12.03
	12H	13.94	14.51	14.96	15.53	16.88	9.11	9.69	10.13	10.70	12.06
4H	2H	11.06	11.75	12.06	12.75	14.07	7.61	8.30	8.62	9.30	10.62
	3H	12.89	13.46	13.90	14.49	15.83	8.96	9.54	9.98	10.56	11.90
	4H	13.58	14.11	14.60	15.13	16.49	9.51	10.04	10.53	11.05	12.41
	6H	14.10	14.55	15.13	15.59	16.95	9.93	10.38	10.96	11.42	12.78
	8H	14.27	14.69	15.31	15.73	17.10	10.06	10.48	11.09	11.52	12.89
	12H	14.37	14.75	15.42	15.80	17.17	10.13	10.51	11.18	11.56	12.93
8H	4H	13.55	13.97	14.58	15.00	16.38	9.79	10.21	10.82	11.25	12.62
	6H	14.12	14.46	15.17	15.54	16.91	10.31	10.66	11.37	11.73	13.10
	8H	14.33	14.64	15.40	15.70	17.09	10.50	10.81	11.57	11.87	13.26
	12H	14.47	14.74	15.54	15.80	17.23	10.62	10.89	11.69	11.95	13.38
12H	4H	13.50	13.88	14.55	14.93	16.31	9.79	10.17	10.85	11.22	12.60
	6H	14.09	14.40	15.16	15.46	16.85	10.36	10.67	11.42	11.73	13.12
	8H	14.31	14.58	15.38	15.64	17.07	10.57	10.84	11.64	11.90	13.33