

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: P927190

Luminaire Tested: DFN2DIP-HX4F0-120D110US830-RLLONL

Issue Date: 12/12/2024

Test Information

Test Method: LM-79-2019
Report Number: P927190
REPORT IS A COMBINATION OF REPORTS P900962 AND P896187
Test Lab: INNOVATION CENTER
Issue Date: 12/12/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-HX4F0-120D110US830-RLLONL
Description: 4 foot, Hexagon Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

Summary

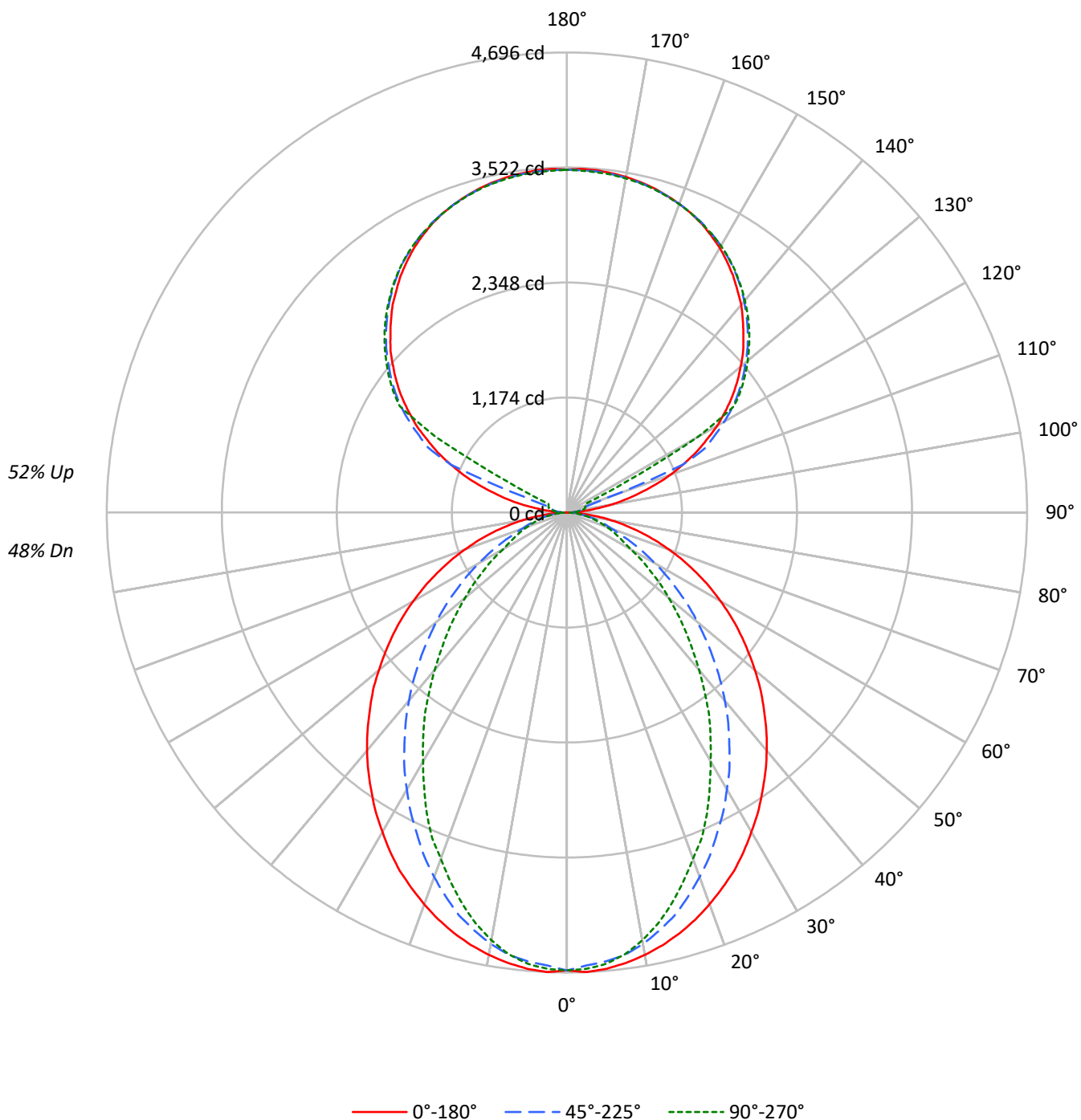
Lumens per Lamp: N/A
Luminaire Lumens: 19877.3 lumens
Efficiency: N/A
Efficacy: 93.1 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16
Luminous Opening: Rectangular w/ Sides (W: 3.54' x L: 4.09' x H: 0.1')
CIE Type: General Diffuse

Input Watts (W): 213.4
Input Voltage (V):
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.9954
Total Harmonic Distortion (THDi): 0.076
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	55	55	55
1	98	94	90	87	90	87	83	80	73	71	69	60	59	58	49	48	47
2	90	82	77	72	82	76	71	67	64	61	58	54	51	49	44	42	40
3	82	73	66	60	75	67	61	56	57	53	49	48	45	42	39	37	35
4	75	65	57	51	69	60	53	48	51	46	42	43	39	36	35	33	30
5	69	58	50	44	64	54	47	42	46	41	37	39	35	32	32	29	27
6	64	52	44	39	59	49	42	36	42	36	32	35	31	28	29	26	24
7	59	47	39	34	54	44	37	32	38	32	29	32	28	25	27	24	21
8	55	43	35	30	51	40	33	29	35	29	25	30	25	22	25	22	19
9	51	39	32	27	47	37	30	26	32	27	23	27	23	20	23	20	18
10	48	36	29	24	44	34	27	23	29	24	21	25	21	18	21	18	16

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	3476	3476	3476
5°	3482	3421	3443
10°	3447	3354	3331
15°	3400	3244	3158
20°	3338	3091	2945
25°	3274	2920	2740
30°	3188	2745	2480
35°	3103	2556	2252
40°	3018	2361	1989
45°	2918	2144	1752
50°	2815	1926	1520
55°	2708	1692	1297
60°	2583	1448	1068
65°	2440	1199	961
70°	2267	968	870
75°	2049	854	792
80°	1734	717	687
85°	1212	480	518

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°
Vertical Angle: 45°
Luminance: 2918 cd/sqm

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	438.1	2.2
10°-20°	1202.7	6.1
20°-30°	1688.5	8.5
30°-40°	1840.5	9.3
40°-50°	1691.7	8.5
50°-60°	1328.5	6.7
60°-70°	864.8	4.4
70°-80°	445.1	2.2
80°-90°	119.8	0.6
90°-100°	115.4	0.6
100°-110°	430.1	2.2
110°-120°	1140.7	5.7
120°-130°	1891.9	9.5
130°-140°	2009.6	10.1
140°-150°	1867.7	9.4
150°-160°	1501.6	7.6
160°-170°	967.6	4.9
170°-180°	333.0	1.7
0°-30°	3329.2	16.7
0°-40°	5169.8	26.0
0°-60°	8190.0	41.2
0°-90°	9619.7	48.4
90°-120°	1686.2	8.5
90°-150°	7455.4	37.5
90°-180°	10258.0	51.6
0°-180°	19877.3	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	4674	4674	4674	4674	4674	
5°	4674	4653	4598	4636	4624	443
15°	4446	4399	4256	4175	4133	1253
25°	4036	3900	3621	3448	3384	1856
35°	3477	3262	2889	2623	2530	2177
45°	2843	2559	2115	1815	1713	2195
55°	2162	1832	1375	1121	1041	1931
65°	1460	1117	736	592	579	1447
75°	778	482	338	309	305	823
85°	182	93	80	80	80	209
90°	2	30	50	63	68	19
95°	164	81	99	112	109	195
105°	770	846	155	182	192	822
115°	1456	1499	1562	390	208	1433
125°	2058	2091	2139	2157	2165	1836
135°	2547	2588	2610	2636	2631	1968
145°	2955	2952	2995	3013	3000	1848
155°	3253	3231	3261	3276	3256	1499
165°	3428	3413	3420	3438	3420	968
175°	3506	3489	3494	3512	3486	334
180°	3499	3499	3499	3499	3499	

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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	4674.4	4674.4	4674.4	4674.4	4674.4
2.5°	4695.5	4674.4	4627.8	4670.4	4661.8
5°	4674.4	4653.3	4598.1	4636.3	4623.7
7.5°	4636.3	4611.1	4551.9	4568.5	4547.4
10°	4585.5	4556.0	4471.5	4458.5	4433.4
12.5°	4522.2	4484.1	4369.6	4344.5	4297.9
15°	4446.0	4399.3	4255.7	4175.3	4133.1
17.5°	4357.1	4289.3	4111.6	4018.7	3951.0
20°	4255.7	4170.8	3959.4	3854.0	3760.6
22.5°	4145.7	4048.3	3802.8	3659.2	3595.9
25°	4035.8	3900.2	3621.0	3447.8	3384.0
27.5°	3904.7	3760.6	3451.8	3253.0	3155.6
30°	3765.1	3604.0	3265.6	3050.1	2935.7
32.5°	3629.6	3434.8	3088.3	2834.3	2728.3
35°	3477.4	3261.5	2889.4	2622.9	2529.5
37.5°	3329.3	3096.4	2703.2	2411.0	2305.5
40°	3172.6	2919.1	2508.5	2208.2	2098.2
42.5°	3011.9	2741.4	2314.1	2000.8	1895.4
45°	2842.8	2559.2	2115.3	1814.6	1713.1
47.5°	2682.1	2381.9	1925.0	1624.3	1531.4
50°	2504.4	2204.1	1738.7	1446.5	1358.1
52.5°	2330.7	2013.4	1561.0	1281.8	1201.5
55°	2161.5	1831.7	1374.7	1121.1	1040.8
57.5°	1988.2	1649.8	1210.0	973.0	905.3
60°	1810.5	1472.1	1036.3	820.9	753.2
62.5°	1637.3	1298.9	888.2	685.4	651.6
65°	1459.6	1116.7	736.1	592.5	579.4
67.5°	1290.4	947.4	592.5	520.2	507.6
70°	1112.6	782.7	490.6	448.3	431.3
72.5°	943.4	630.2	410.2	376.5	368.0
75°	778.2	482.0	338.5	308.8	304.7
77.5°	613.6	342.4	266.6	249.6	241.0
80°	461.0	245.5	202.8	186.2	186.2
82.5°	321.4	165.1	139.6	131.0	131.0
85°	181.8	92.9	80.3	80.3	80.3
87.5°	67.8	33.6	33.6	29.6	29.6
90°	2.5	30.3	50.5	63.4	68.2
92.5°	63.4	53.3	60.7	65.9	68.2
95°	164.5	80.9	98.6	111.5	108.9
97.5°	296.1	88.7	128.9	136.8	139.2
100°	448.3	101.3	144.3	164.5	169.6
102.5°	615.1	610.3	149.4	177.1	184.9
105°	769.6	845.7	154.6	182.2	192.5
107.5°	949.5	1012.5	159.7	187.3	197.5
110°	1121.7	1174.6	443.2	190.0	199.9

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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	1283.8	1329.1	1286.1	194.8	202.6
115°	1455.7	1498.7	1562.2	389.9	207.7
117.5°	1605.2	1655.7	1699.0	1336.7	673.4
120°	1772.3	1810.2	1855.9	1886.2	1544.4
122.5°	1913.9	1954.5	2005.3	2020.3	2023.1
125°	2058.2	2091.3	2139.4	2157.1	2164.6
127.5°	2189.9	2225.3	2263.5	2288.8	2291.2
130°	2314.0	2354.6	2382.3	2410.3	2407.9
132.5°	2440.6	2473.7	2501.4	2524.2	2521.8
135°	2547.1	2587.6	2610.2	2635.8	2630.6
137.5°	2658.3	2688.7	2714.2	2739.5	2731.9
140°	2767.2	2787.5	2815.2	2838.1	2825.4
142.5°	2858.5	2876.2	2909.0	2929.2	2916.6
145°	2954.7	2952.0	2995.0	3012.8	3000.2
147.5°	3038.1	3030.5	3073.5	3086.1	3076.2
150°	3119.2	3101.5	3142.0	3157.1	3144.5
152.5°	3187.4	3167.3	3205.2	3220.5	3202.8
155°	3253.3	3230.7	3261.0	3276.1	3256.0
157.5°	3306.5	3286.3	3309.2	3326.9	3306.5
160°	3352.2	3336.8	3352.2	3367.2	3349.5
162.5°	3392.4	3377.4	3390.1	3407.8	3385.0
165°	3428.0	3412.9	3420.4	3438.1	3420.4
167.5°	3455.9	3440.6	3448.4	3466.1	3443.3
170°	3478.8	3463.4	3468.5	3486.3	3463.4
172.5°	3493.8	3478.8	3483.9	3501.6	3478.8
175°	3506.4	3488.7	3493.8	3511.6	3486.3
177.5°	3511.6	3493.8	3496.5	3514.2	3491.4
180°	3498.9	3498.9	3498.9	3498.9	3498.9

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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	11.32	12.14	12.30	13.13	14.42	7.30	8.11	8.27	9.10	10.40
	3H	13.00	13.73	13.99	14.73	16.05	8.49	9.22	9.48	10.21	11.53
	4H	13.61	14.30	14.61	15.30	16.63	8.94	9.63	9.94	10.63	11.95
	6H	14.03	14.67	15.04	15.67	17.01	9.26	9.90	10.27	10.90	12.24
	8H	14.16	14.76	15.18	15.78	17.12	9.35	9.96	10.37	10.98	12.31
	12H	14.22	14.80	15.24	15.81	17.17	9.39	9.97	10.42	10.98	12.34
4H	2H	11.34	12.03	12.35	13.03	14.36	7.89	8.58	8.90	9.58	10.91
	3H	13.17	13.74	14.19	14.77	16.11	9.24	9.82	10.26	10.84	12.18
	4H	13.86	14.39	14.89	15.41	16.77	9.79	10.32	10.82	11.34	12.70
	6H	14.38	14.83	15.41	15.87	17.23	10.21	10.66	11.25	11.71	13.07
	8H	14.55	14.97	15.59	16.01	17.39	10.34	10.76	11.38	11.80	13.17
	12H	14.65	15.03	15.70	16.08	17.46	10.41	10.79	11.46	11.84	13.22
8H	4H	13.83	14.25	14.87	15.29	16.66	10.07	10.49	11.11	11.53	12.90
	6H	14.40	14.74	15.46	15.82	17.19	10.59	10.94	11.65	12.02	13.39
	8H	14.61	14.92	15.68	15.98	17.37	10.78	11.09	11.85	12.15	13.54
	12H	14.75	15.02	15.82	16.08	17.51	10.90	11.17	11.97	12.23	13.66
12H	4H	13.78	14.16	14.83	15.21	16.59	10.08	10.46	11.13	11.51	12.89
	6H	14.37	14.68	15.44	15.74	17.13	10.64	10.95	11.71	12.01	13.40
	8H	14.59	14.86	15.66	15.92	17.35	10.85	11.12	11.92	12.18	13.61