

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: P928018

Luminaire Tested: DFN2DIP-HX4F0-080D110US850-RLLONL

Issue Date: 12/12/2024

Test Information

Test Method: LM-79-2019
Report Number: P928018
REPORT IS A COMBINATION OF REPORTS P900954 AND P896187
Test Lab: INNOVATION CENTER
Issue Date: 12/12/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-HX4F0-080D110US850-RLONL
Description: 4 foot, Hexagon Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

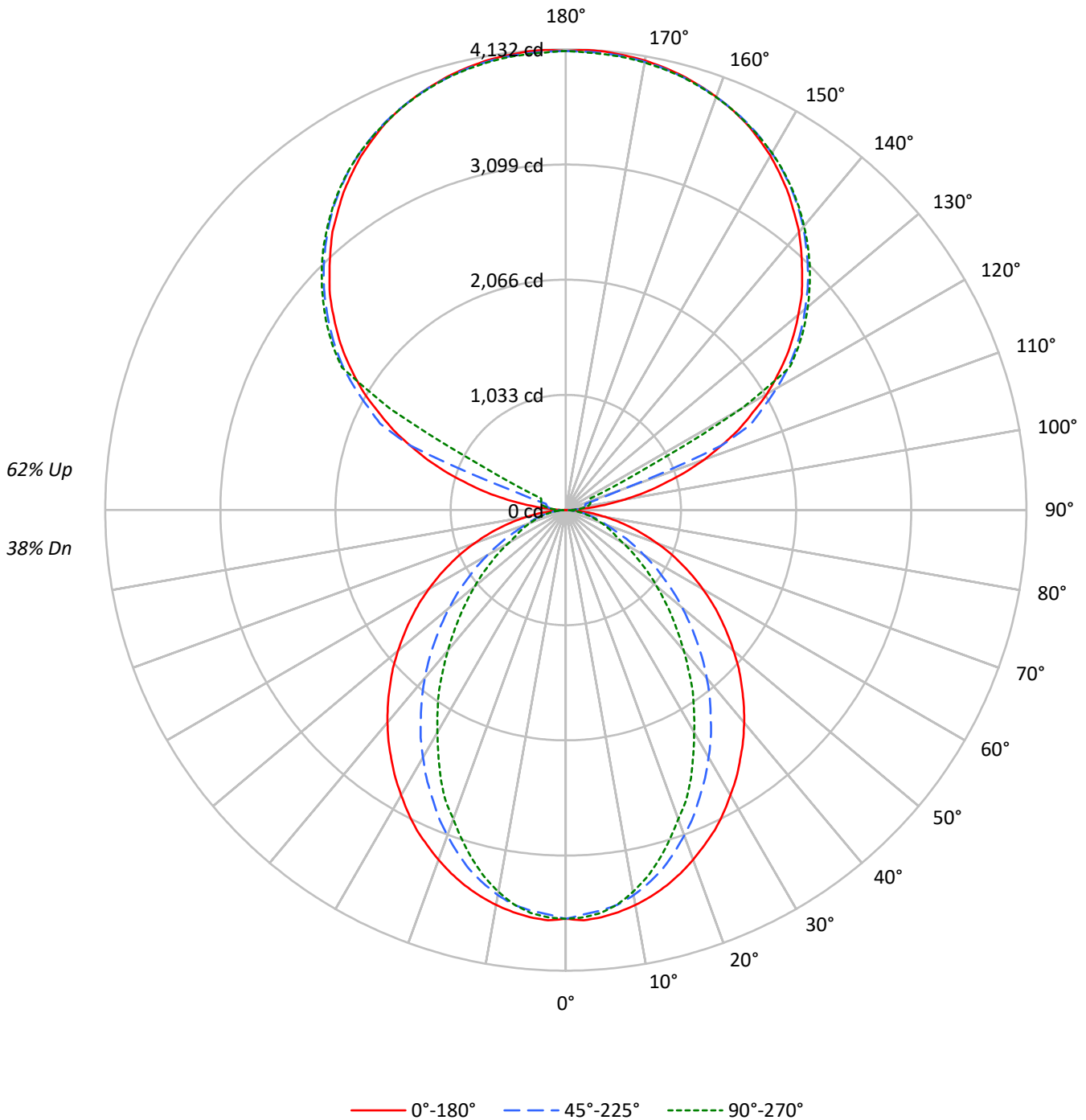
Summary

Lumens per Lamp: N/A
Luminaire Lumens: 19618.2 lumens
Efficiency: N/A
Efficacy: 119.7 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: Semi-Indirect

Input Watts (W): 163.9
Input Voltage (V):
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.9613
Total Harmonic Distortion (THDi): 0.083
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				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	104	104	104	104	95	95	95	95	77	77	77	61	61	61	46	46	46	38				38
1	96	91	88	84	87	83	80	77	68	66	64	54	52	51	41	40	39	33				33
2	87	80	74	70	79	73	68	64	60	56	53	48	45	43	36	35	34	28				28
3	80	71	64	58	72	65	59	54	53	49	45	42	39	37	33	31	29	24				24
4	73	63	55	50	66	58	51	46	47	43	39	38	35	32	29	27	25	21				21
5	67	56	48	43	61	51	45	40	43	38	34	34	31	28	27	24	22	19				19
6	62	50	43	37	56	46	39	35	38	33	30	31	27	25	24	22	20	17				17
7	57	46	38	33	52	42	35	30	35	30	26	28	25	22	22	20	18	15				15
8	53	41	34	29	48	38	32	27	32	27	23	26	22	20	20	18	16	13				13
9	50	38	31	26	45	35	28	24	29	24	21	24	20	18	19	16	14	12				12
10	46	35	28	23	42	32	26	22	27	22	19	22	19	16	18	15	13	11				11

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	2727	2727	2727
5°	2731	2683	2701
10°	2704	2631	2613
15°	2667	2544	2477
20°	2618	2425	2310
25°	2568	2291	2150
30°	2501	2153	1945
35°	2434	2005	1766
40°	2367	1852	1561
45°	2289	1682	1374
50°	2208	1511	1192
55°	2124	1327	1017
60°	2026	1136	838
65°	1914	941	754
70°	1778	759	683
75°	1607	670	621
80°	1359	562	539
85°	951	377	406

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°
 Vertical Angle: 45°
 Luminance: 2289 cd/sqm



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	343.7	1.8
10°-20°	943.4	4.8
20°-30°	1324.5	6.8
30°-40°	1443.8	7.4
40°-50°	1327.0	6.8
50°-60°	1042.1	5.3
60°-70°	678.3	3.5
70°-80°	349.2	1.8
80°-90°	96.4	0.5
90°-100°	135.7	0.7
100°-110°	506.1	2.6
110°-120°	1342.2	6.8
120°-130°	2226.1	11.3
130°-140°	2364.7	12.1
140°-150°	2197.7	11.2
150°-160°	1766.9	9.0
160°-170°	1138.5	5.8
170°-180°	391.9	2.0
0°-30°	2611.6	13.3
0°-40°	4055.4	20.7
0°-60°	6424.5	32.7
0°-90°	7548.4	38.5
90°-120°	1984.0	10.1
90°-150°	8772.5	44.7
90°-180°	12070.0	61.5
0°-180°	19618.2	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	3667	3667	3667	3667	3667	
5°	3667	3650	3607	3637	3627	348
15°	3488	3451	3338	3275	3242	983
25°	3166	3060	2840	2705	2655	1456
35°	2728	2558	2267	2058	1984	1707
45°	2230	2008	1659	1423	1344	1722
55°	1696	1437	1078	879	816	1515
65°	1145	876	577	465	454	1135
75°	610	378	266	242	239	646
85°	143	73	63	63	63	164
90°	3	36	59	75	80	18
95°	194	95	116	131	128	229
105°	906	995	182	214	226	968
115°	1713	1763	1838	459	244	1686
125°	2422	2461	2517	2538	2547	2160
135°	2997	3045	3071	3101	3095	2315
145°	3477	3474	3524	3545	3530	2174
155°	3828	3801	3837	3855	3831	1764
165°	4034	4016	4025	4046	4025	1140
175°	4126	4105	4111	4132	4102	393
180°	4117	4117	4117	4117	4117	



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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	3666.8	3666.8	3666.8	3666.8	3666.8
2.5°	3683.3	3666.8	3630.2	3663.6	3656.9
5°	3666.8	3650.3	3606.9	3636.9	3627.0
7.5°	3636.9	3617.1	3570.6	3583.7	3567.1
10°	3597.0	3573.9	3507.7	3497.5	3477.7
12.5°	3547.5	3517.5	3427.7	3408.0	3371.4
15°	3487.6	3451.0	3338.3	3275.3	3242.2
17.5°	3417.8	3364.7	3225.3	3152.4	3099.2
20°	3338.3	3271.8	3106.0	3023.2	2949.9
22.5°	3252.0	3175.6	2983.1	2870.4	2820.7
25°	3165.8	3059.5	2840.5	2704.6	2654.6
27.5°	3062.9	2949.9	2707.7	2551.8	2475.4
30°	2953.5	2827.1	2561.7	2392.7	2302.8
32.5°	2847.1	2694.4	2422.6	2223.3	2140.3
35°	2727.8	2558.5	2266.6	2057.5	1984.2
37.5°	2611.6	2428.9	2120.5	1891.3	1808.6
40°	2488.8	2289.9	1967.7	1732.1	1645.9
42.5°	2362.7	2150.5	1815.2	1569.6	1486.7
45°	2230.0	2007.5	1659.3	1423.4	1343.9
47.5°	2104.0	1868.4	1510.0	1274.1	1201.3
50°	1964.5	1729.0	1364.0	1134.7	1065.3
52.5°	1828.3	1579.3	1224.4	1005.5	942.5
55°	1695.6	1436.8	1078.4	879.4	816.4
57.5°	1559.7	1294.2	949.2	763.3	710.1
60°	1420.2	1154.8	812.9	643.9	590.8
62.5°	1284.3	1018.8	696.8	537.6	511.2
65°	1144.9	875.9	577.3	464.8	454.5
67.5°	1012.2	743.3	464.8	408.0	398.2
70°	872.8	614.1	384.8	351.7	338.4
72.5°	740.0	494.3	321.8	295.4	288.7
75°	610.5	378.2	265.5	242.2	239.1
77.5°	481.3	268.6	209.2	195.7	189.1
80°	361.5	192.6	159.1	146.1	146.1
82.5°	252.1	129.5	109.5	102.8	102.8
85°	142.6	72.9	63.0	63.0	63.0
87.5°	53.1	26.4	26.4	23.3	23.3
90°	2.9	35.7	59.4	74.6	80.3
92.5°	74.6	62.7	71.4	77.5	80.3
95°	193.5	95.2	116.0	131.2	128.1
97.5°	348.4	104.4	151.7	160.9	163.8
100°	527.4	119.2	169.8	193.5	199.5
102.5°	723.7	718.1	175.8	208.4	217.6
105°	905.6	995.1	181.9	214.4	226.5
107.5°	1117.2	1191.4	187.9	220.4	232.4
110°	1319.8	1382.1	521.5	223.6	235.2



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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	1510.6	1563.9	1513.3	229.2	238.4
115°	1712.9	1763.4	1838.2	458.8	244.4
117.5°	1888.7	1948.2	1999.1	1572.8	792.4
120°	2085.4	2129.9	2183.7	2219.4	1817.2
122.5°	2252.0	2299.7	2359.5	2377.3	2380.5
125°	2421.8	2460.8	2517.3	2538.2	2547.0
127.5°	2576.8	2618.5	2663.4	2693.1	2696.0
130°	2722.8	2770.6	2803.1	2836.0	2833.3
132.5°	2871.8	2910.7	2943.3	2970.1	2967.4
135°	2997.1	3044.8	3071.3	3101.4	3095.3
137.5°	3127.9	3163.6	3193.7	3223.4	3214.5
140°	3256.0	3280.0	3312.6	3339.4	3324.6
142.5°	3363.5	3384.3	3422.9	3446.7	3431.8
145°	3476.7	3473.5	3524.1	3545.0	3530.2
147.5°	3574.8	3565.9	3616.4	3631.3	3619.7
150°	3670.2	3649.4	3697.1	3714.8	3700.0
152.5°	3750.5	3726.8	3771.4	3789.5	3768.6
155°	3828.0	3801.4	3837.1	3854.9	3831.2
157.5°	3890.6	3866.9	3893.8	3914.7	3890.6
160°	3944.4	3926.3	3944.4	3962.0	3941.2
162.5°	3991.7	3974.1	3989.0	4009.8	3983.0
165°	4033.5	4015.8	4024.7	4045.5	4024.7
167.5°	4066.4	4048.4	4057.6	4078.5	4051.6
170°	4093.3	4075.2	4081.2	4102.2	4075.2
172.5°	4111.0	4093.3	4099.3	4120.2	4093.3
175°	4125.8	4105.0	4111.0	4131.9	4102.2
177.5°	4131.9	4111.0	4114.2	4135.0	4108.2
180°	4117.1	4117.1	4117.1	4117.1	4117.1



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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	9.45	10.20	10.51	11.25	12.68	5.43	6.17	6.48	7.23	8.65
	3H	11.12	11.79	12.19	12.85	14.30	6.61	7.27	7.67	8.34	9.79
	4H	11.73	12.36	12.81	13.43	14.88	7.06	7.69	8.13	8.75	10.21
	6H	12.15	12.73	13.23	13.80	15.26	7.38	7.96	8.46	9.03	10.49
	8H	12.27	12.82	13.36	13.91	15.37	7.46	8.02	8.55	9.10	10.56
	12H	12.33	12.85	13.43	13.93	15.42	7.51	8.03	8.60	9.11	10.59
4H	2H	9.46	10.09	10.54	11.16	12.61	6.01	6.64	7.09	7.71	9.16
	3H	11.28	11.81	12.37	12.90	14.37	7.35	7.88	8.45	8.97	10.44
	4H	11.97	12.45	13.07	13.54	15.03	7.90	8.38	9.00	9.47	10.95
	6H	12.48	12.90	13.59	14.00	15.49	8.32	8.73	9.42	9.84	11.32
	8H	12.66	13.04	13.76	14.14	15.64	8.45	8.83	9.55	9.93	11.43
	12H	12.75	13.10	13.87	14.21	15.71	8.51	8.86	9.63	9.97	11.47
8H	4H	11.93	12.32	13.04	13.42	14.92	8.18	8.56	9.28	9.66	11.16
	6H	12.50	12.82	13.62	13.96	15.45	8.69	9.01	9.82	10.15	11.65
	8H	12.72	12.99	13.85	14.12	15.63	8.89	9.16	10.02	10.29	11.80
	12H	12.85	13.10	13.99	14.21	15.77	9.00	9.25	10.14	10.36	11.92
12H	4H	11.88	12.23	13.00	13.34	14.84	8.18	8.52	9.30	9.64	11.14
	6H	12.47	12.75	13.61	13.87	15.39	8.74	9.02	9.87	10.14	11.66
	8H	12.69	12.94	13.83	14.05	15.61	8.95	9.19	10.09	10.31	11.86