

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: P924613

Luminaire Tested: DFN2DIP-HX4F0-090D100US950-RLLFLL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P924613
REPORT IS A COMBINATION OF REPORTS P899418 AND P896188
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-HX4F0-090D100US950-RLLFLL
Description: 4 foot, Hexagon Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Frosted Lens
Light Source: -
Ballast/Driver: -

Summary

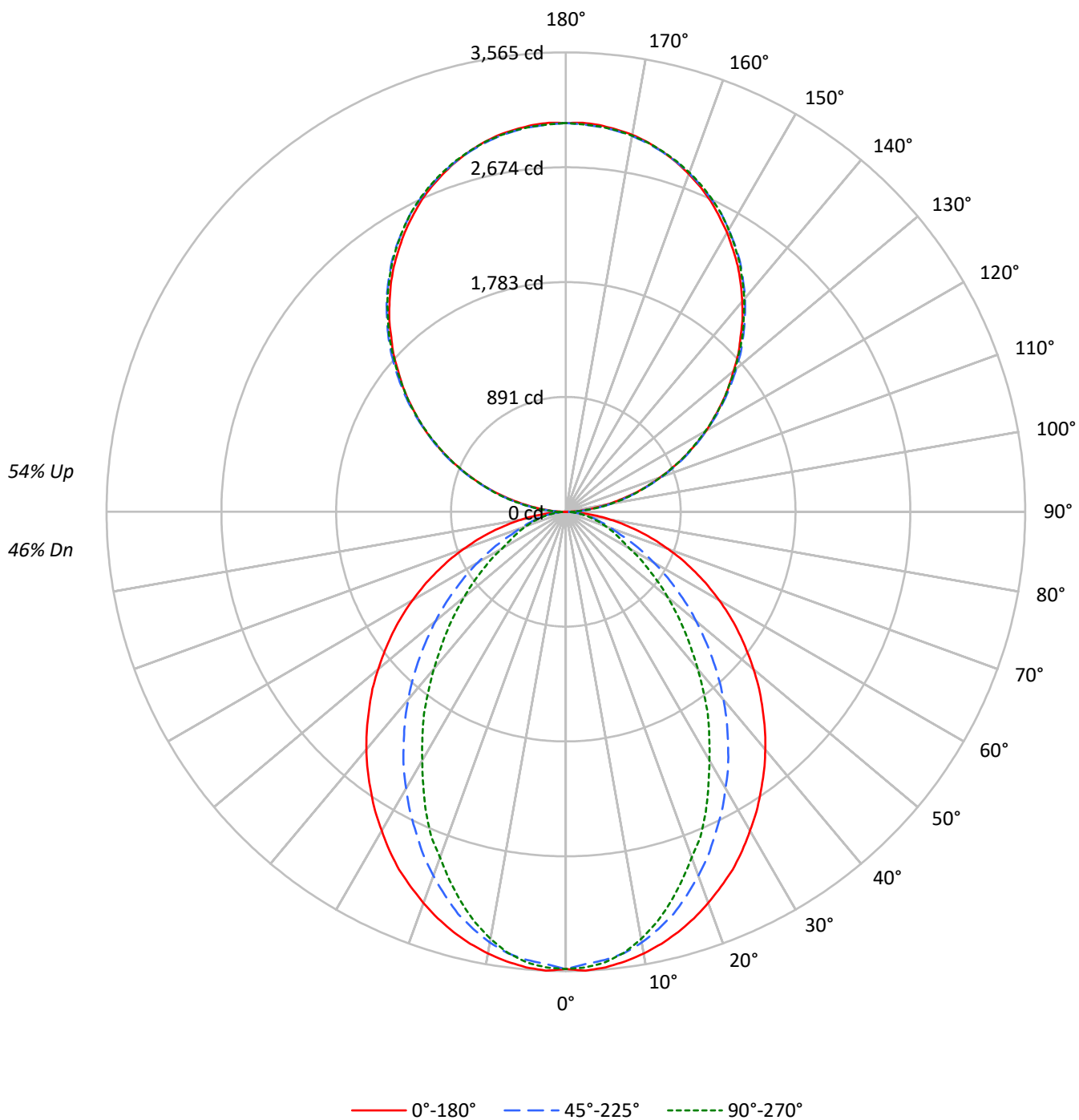
Lumens per Lamp: N/A
Luminaire Lumens: 15741.0 lumens
Efficiency: N/A
Efficacy: 107.5 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16
Luminous Opening: Rectangular w/ Sides (W: 3.54' x L: 4.09' x H: 0.1')
CIE Type: General Diffuse

Input Watts (W): 146.4
Input Voltage (V):
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.9821
Total Harmonic Distortion (THDi): 0.08
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 24 FT

TEST NUMBER: P924613

CATALOG NUMBER: DFN2DIP-HX4F0-090D100US950-RLLFLL

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	106	106	106	106	98	98	98	98	81	81	81	66	66	66	53	53	53
1	97	93	90	86	89	86	83	80	72	70	68	59	58	56	47	46	45
2	89	82	76	71	82	76	71	66	64	60	57	52	50	48	42	41	39
3	82	72	65	60	75	67	61	56	56	52	48	47	44	41	38	36	34
4	75	64	57	51	69	60	53	48	50	45	41	42	38	35	34	32	29
5	69	58	50	44	63	53	46	41	45	40	36	38	34	31	31	28	26
6	63	52	44	38	58	48	41	36	41	36	32	34	30	27	28	25	23
7	59	47	39	34	54	44	37	32	37	32	28	31	27	24	26	23	21
8	55	43	35	30	50	40	33	28	34	29	25	29	25	22	24	21	19
9	51	39	32	27	47	36	30	25	31	26	23	27	23	20	22	19	17
10	48	36	29	24	44	33	27	23	29	24	20	25	21	18	21	18	15

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	2639	2639	2639
5°	2643	2597	2613
10°	2617	2546	2529
15°	2581	2462	2397
20°	2534	2347	2236
25°	2485	2217	2080
30°	2420	2084	1883
35°	2356	1940	1709
40°	2291	1792	1510
45°	2215	1628	1330
50°	2137	1462	1154
55°	2055	1285	985
60°	1961	1099	811
65°	1852	910	730
70°	1721	734	661
75°	1555	648	601
80°	1316	544	522
85°	919	365	393

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 90°

Vertical Angle: 90°

Luminance: 2275 cd/sqm

TEST NUMBER: P924613

CATALOG NUMBER: DFN2DIP-HX4F0-090D100US950-RLLFLL

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	332.6	2.1
10°-20°	913.0	5.8
20°-30°	1281.8	8.1
30°-40°	1397.3	8.9
40°-50°	1284.2	8.2
50°-60°	1008.6	6.4
60°-70°	656.5	4.2
70°-80°	337.9	2.1
80°-90°	94.8	0.6
90°-100°	186.7	1.2
100°-110°	593.2	3.8
110°-120°	1015.2	6.4
120°-130°	1335.1	8.5
130°-140°	1498.6	9.5
140°-150°	1469.5	9.3
150°-160°	1232.7	7.8
160°-170°	817.5	5.2
170°-180°	285.7	1.8
0°-30°	2527.4	16.1
0°-40°	3924.6	24.9
0°-60°	6217.4	39.5
0°-90°	7306.7	46.4
90°-120°	1795.1	11.4
90°-150°	6098.3	38.7
90°-180°	8434.0	53.6
0°-180°	15741.0	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	3549	3549	3549	3549	3549	
5°	3549	3533	3491	3520	3510	336
15°	3375	3340	3231	3170	3138	951
25°	3064	2961	2749	2617	2569	1409
35°	2640	2476	2194	1991	1920	1652
45°	2158	1943	1606	1378	1300	1667
55°	1641	1390	1044	851	790	1466
65°	1108	848	559	450	440	1099
75°	591	366	257	234	231	625
85°	138	70	61	61	61	158
90°	3	33	89	84	86	16
95°	133	158	163	163	158	148
105°	548	555	560	565	565	578
115°	1019	1033	1029	1026	1019	1008
125°	1482	1504	1497	1489	1486	1324
135°	1916	1945	1950	1948	1940	1481
145°	2327	2345	2360	2362	2352	1454
155°	2661	2668	2676	2689	2680	1225
165°	2894	2892	2892	2910	2897	817
175°	3012	3004	2999	3017	3002	286
180°	3017	3017	3017	3017	3017	

TEST NUMBER: P924613

CATALOG NUMBER: DFN2DIP-HX4F0-090D100US950-RLFL

CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	3548.6	3548.6	3548.6	3548.6	3548.6
2.5°	3564.6	3548.6	3513.1	3545.5	3539.1
5°	3548.6	3532.6	3490.7	3519.6	3510.1
7.5°	3519.6	3500.5	3455.6	3468.2	3452.1
10°	3481.1	3458.6	3394.6	3384.7	3365.6
12.5°	3433.1	3404.2	3317.2	3298.2	3262.7
15°	3375.2	3339.8	3230.7	3169.7	3137.7
17.5°	3307.7	3256.3	3121.3	3050.8	2999.4
20°	3230.7	3166.3	3005.8	2925.7	2854.8
22.5°	3147.2	3073.3	2886.9	2777.9	2729.9
25°	3063.8	2960.8	2749.0	2617.4	2569.0
27.5°	2964.3	2854.8	2620.4	2469.5	2395.6
30°	2858.3	2736.0	2479.1	2315.5	2228.6
32.5°	2755.3	2607.5	2344.5	2151.7	2071.2
35°	2639.9	2476.0	2193.5	1991.2	1920.3
37.5°	2527.4	2350.7	2052.1	1830.3	1750.3
40°	2408.6	2216.0	1904.3	1676.4	1592.9
42.5°	2286.5	2081.2	1756.7	1519.0	1438.8
45°	2158.1	1942.8	1605.8	1377.5	1300.5
47.5°	2036.1	1808.2	1461.3	1233.0	1162.5
50°	1901.2	1673.2	1320.0	1098.1	1031.0
52.5°	1769.4	1528.5	1185.1	973.1	912.1
55°	1640.9	1390.5	1043.6	851.2	790.1
57.5°	1509.4	1252.5	918.6	738.7	687.3
60°	1374.4	1117.5	786.8	623.2	571.7
62.5°	1243.0	986.1	674.3	520.3	494.7
65°	1108.0	847.7	558.8	449.7	439.9
67.5°	979.6	719.2	449.7	394.9	385.3
70°	844.7	594.2	372.4	340.4	327.4
72.5°	716.2	478.3	311.4	285.8	279.4
75°	590.8	366.0	256.9	234.4	231.3
77.5°	465.7	260.0	202.3	189.5	183.0
80°	349.9	186.4	154.0	141.4	141.4
82.5°	243.9	125.4	106.0	99.5	99.5
85°	137.9	70.5	61.0	61.0	61.0
87.5°	51.4	25.6	25.6	22.5	22.5
90°	2.8	32.7	89.1	83.7	86.4
92.5°	56.4	76.4	79.2	81.9	81.9
95°	132.8	158.3	162.8	162.8	158.3
97.5°	221.0	244.7	254.7	254.7	254.7
100°	322.9	343.8	351.1	351.1	348.4
102.5°	430.3	445.7	455.7	458.4	455.7
105°	547.6	554.8	560.3	564.9	564.9
107.5°	664.0	675.0	675.0	676.8	664.0
110°	776.8	791.3	791.3	791.3	784.1

TEST NUMBER: P924613

CATALOG NUMBER: DFN2DIP-HX4F0-090D100US950-RLLFLL

CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	898.7	914.1	911.5	904.1	898.7
115°	1018.8	1033.3	1028.8	1026.0	1018.8
117.5°	1137.9	1158.0	1145.2	1137.9	1130.6
120°	1257.9	1278.0	1257.9	1257.9	1249.8
122.5°	1367.1	1392.6	1379.9	1372.6	1367.1
125°	1481.8	1504.5	1497.2	1489.0	1486.3
127.5°	1593.7	1621.8	1611.8	1600.9	1593.7
130°	1698.2	1730.9	1726.5	1720.9	1711.0
132.5°	1815.6	1841.0	1842.8	1830.2	1822.8
135°	1916.5	1944.7	1950.2	1947.5	1940.1
137.5°	2029.3	2052.1	2056.6	2054.8	2043.8
140°	2128.5	2151.2	2164.0	2164.0	2153.9
142.5°	2230.4	2253.1	2260.3	2263.1	2253.1
145°	2326.7	2344.9	2359.5	2362.2	2352.2
147.5°	2413.1	2435.9	2446.8	2451.4	2441.4
150°	2502.3	2517.8	2527.8	2535.9	2527.8
152.5°	2581.4	2596.9	2609.7	2619.7	2609.7
155°	2660.6	2667.9	2676.1	2688.8	2680.5
157.5°	2728.8	2734.3	2738.8	2757.0	2744.3
160°	2789.8	2795.2	2797.9	2813.3	2802.5
162.5°	2846.2	2846.2	2848.8	2866.1	2853.4
165°	2894.3	2891.6	2891.6	2909.8	2897.1
167.5°	2938.0	2929.8	2929.8	2948.1	2935.3
170°	2970.8	2963.5	2960.7	2979.0	2963.5
172.5°	2993.5	2986.2	2983.4	3001.7	2986.2
175°	3011.7	3004.4	2999.0	3017.1	3001.7
177.5°	3021.7	3014.4	3008.9	3024.4	3008.9
180°	3017.1	3017.1	3017.1	3017.1	3017.1

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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	10.17	10.97	11.17	11.98	13.30	6.15	6.95	7.14	7.95	9.27
	3H	11.85	12.57	12.85	13.58	14.92	7.33	8.05	8.34	9.06	10.41
	4H	12.46	13.14	13.47	14.15	15.50	7.78	8.46	8.80	9.48	10.83
	6H	12.88	13.50	13.91	14.52	15.88	8.11	8.73	9.13	9.75	11.11
	8H	13.00	13.60	14.04	14.63	15.99	8.20	8.79	9.23	9.82	11.19
	12H	13.06	13.63	14.10	14.66	16.04	8.24	8.80	9.28	9.83	11.22
4H	2H	10.19	10.87	11.21	11.88	13.23	6.74	7.42	7.76	8.43	9.78
	3H	12.02	12.58	13.05	13.62	14.99	8.09	8.65	9.12	9.69	11.06
	4H	12.71	13.22	13.75	14.26	15.65	8.64	9.15	9.67	10.19	11.57
	6H	13.22	13.66	14.27	14.72	16.11	9.06	9.50	10.10	10.56	11.94
	8H	13.40	13.81	14.45	14.86	16.26	9.19	9.60	10.23	10.65	12.05
	12H	13.49	13.86	14.56	14.93	16.33	9.25	9.62	10.32	10.69	12.09
8H	4H	12.67	13.09	13.72	14.14	15.54	8.91	9.33	9.96	10.38	11.78
	6H	13.24	13.58	14.31	14.67	16.07	9.43	9.78	10.51	10.87	12.26
	8H	13.46	13.76	14.54	14.83	16.25	9.63	9.93	10.71	11.00	12.42
	12H	13.60	13.86	14.68	14.93	16.39	9.75	10.01	10.83	11.08	12.54
12H	4H	12.62	13.00	13.69	14.06	15.47	8.92	9.29	9.99	10.36	11.76
	6H	13.22	13.52	14.30	14.59	16.01	9.48	9.78	10.56	10.86	12.28
	8H	13.44	13.70	14.52	14.77	16.23	9.70	9.96	10.78	11.03	12.49