

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: P910976

Luminaire Tested: DFN2DIP-HX4F0-090D120US850-FLLFLL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P910976
REPORT IS A COMBINATION OF REPORTS P899453 AND P896188
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-HX4F0-090D120US850-FLLFLL
Description: 4 foot, Hexagon Define Geo, with Direct Frosted Lens, Indirect Frosted Lens
Light Source: -
Ballast/Driver: -

Summary

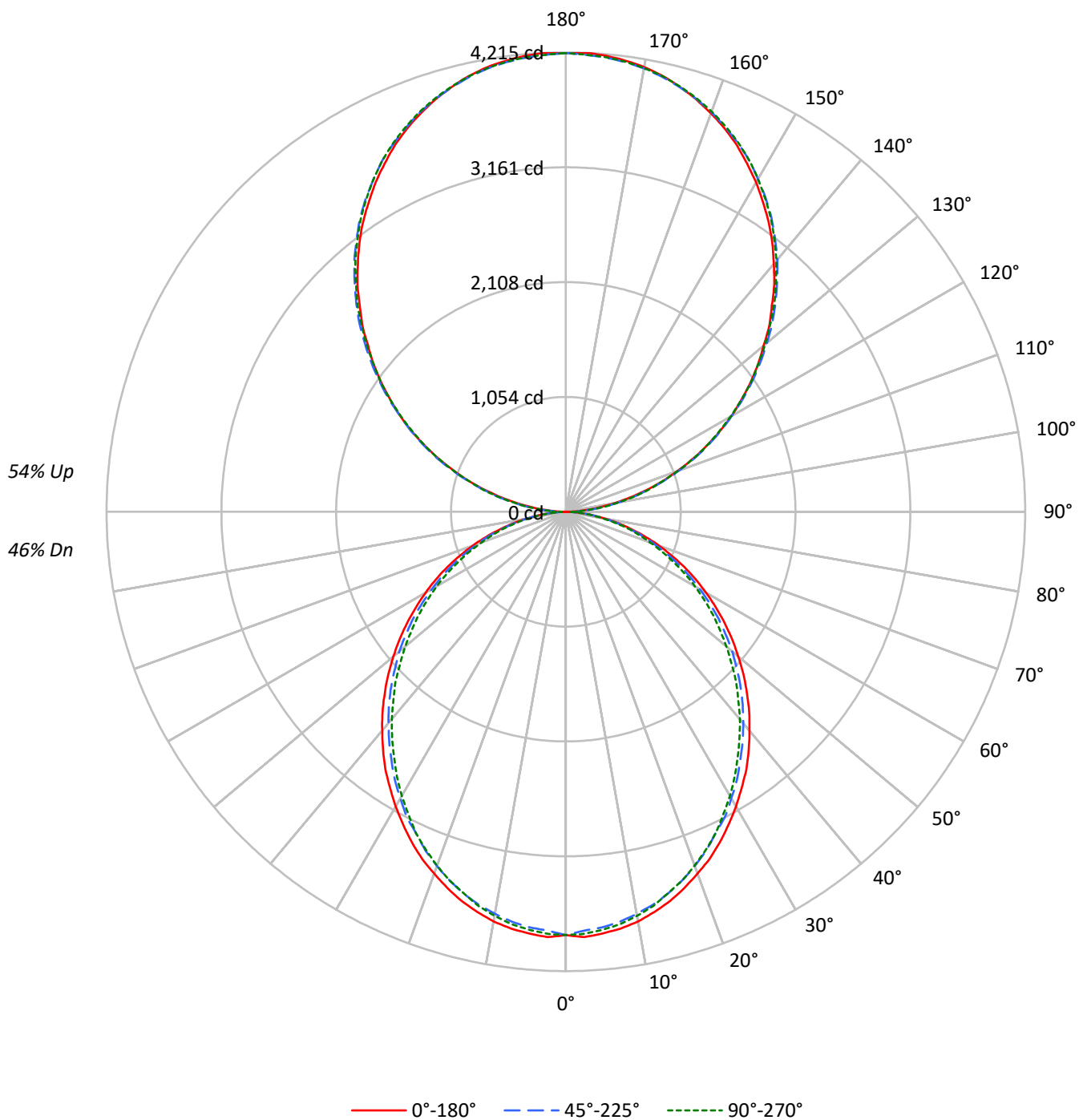
Lumens per Lamp: N/A
Luminaire Lumens: 21658.8 lumens
Efficiency: N/A
Efficacy: 133.8 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.54' x L: 4.09' x H: 0.1')
CIE Type: General Diffuse

Input Watts (W): 161.9
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: P910976

CATALOG NUMBER: DFN2DIP-HX4F0-090D120US850-FLLFLL

Luminous Intensity Polar Plot



TEST NUMBER: P910976

CATALOG NUMBER: DFN2DIP-HX4F0-090D120US850-FLLFL

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	97	97	97	97	81	81	81	66	66	66	52	52	52
1	97	93	89	85	89	85	82	79	71	69	66	58	56	55	46	45	44
2	88	81	75	70	81	74	69	65	62	58	55	51	48	46	41	39	37
3	80	71	64	58	73	65	59	54	55	50	46	45	42	39	36	34	32
4	74	63	55	49	67	58	51	46	49	43	39	40	36	33	32	29	27
5	67	56	48	42	62	52	45	39	44	38	34	36	32	29	29	26	24
6	62	50	42	36	57	46	39	34	39	34	30	33	28	25	26	23	21
7	57	45	37	32	53	42	35	30	36	30	26	30	25	22	24	21	19
8	53	41	33	28	49	38	31	26	32	27	23	27	23	20	22	19	17
9	50	37	30	25	45	35	28	24	30	24	21	25	21	18	20	17	15
10	46	34	27	22	42	32	25	21	27	22	19	23	19	16	19	16	14

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	2888	2888	2888
5°	2893	2848	2867
10°	2869	2810	2828
15°	2827	2764	2768
20°	2771	2700	2706
25°	2714	2623	2634
30°	2643	2552	2543
35°	2576	2468	2447
40°	2494	2383	2355
45°	2411	2298	2261
50°	2321	2209	2152
55°	2227	2105	2052
60°	2120	1983	1938
65°	2004	1856	1803
70°	1856	1701	1658
75°	1651	1516	1524
80°	1405	1280	1268
85°	1019	872	844

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 90°

Vertical Angle: 90°

Luminance: 3173 cd/sqm

TEST NUMBER: P910976

CATALOG NUMBER: DFN2DIP-HX4F0-090D120US850-FLLFLL

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	365.5	1.7
10°-20°	1028.5	4.7
20°-30°	1511.4	7.0
30°-40°	1755.4	8.1
40°-50°	1753.3	8.1
50°-60°	1528.8	7.1
60°-70°	1130.1	5.2
70°-80°	639.4	3.0
80°-90°	180.7	0.8
90°-100°	260.4	1.2
100°-110°	827.5	3.8
110°-120°	1416.1	6.5
120°-130°	1862.4	8.6
130°-140°	2090.5	9.7
140°-150°	2050.0	9.5
150°-160°	1719.6	7.9
160°-170°	1140.4	5.3
170°-180°	398.6	1.8
0°-30°	2905.4	13.4
0°-40°	4660.9	21.5
0°-60°	7942.9	36.7
0°-90°	9893.2	45.7
90°-120°	2504.0	11.6
90°-150°	8506.9	39.3
90°-180°	11766.0	54.3
0°-180°	21658.8	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	3884	3884	3884	3884	3884	
5°	3884	3869	3828	3858	3850	369
15°	3697	3675	3626	3641	3622	1041
25°	3346	3316	3253	3260	3253	1540
35°	2887	2850	2790	2767	2748	1803
45°	2349	2323	2267	2226	2211	1813
55°	1778	1755	1710	1666	1647	1589
65°	1199	1176	1139	1106	1087	1185
75°	627	620	601	579	586	670
85°	153	149	146	134	131	171
90°	4	46	124	117	120	21
95°	185	221	227	227	221	206
105°	764	774	782	788	788	806
115°	1421	1442	1435	1431	1421	1406
125°	2067	2099	2089	2077	2073	1847
135°	2674	2713	2720	2717	2706	2066
145°	3246	3271	3291	3295	3281	2028
155°	3711	3722	3733	3751	3739	1708
165°	4038	4034	4034	4059	4041	1139
175°	4201	4191	4184	4209	4187	399
180°	4209	4209	4209	4209	4209	

TEST NUMBER: P910976

CATALOG NUMBER: DFN2DIP-HX4F0-090D120US850-FLLFLL

CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	3883.6	3883.6	3883.6	3883.6	3883.6
2.5°	3906.2	3887.6	3846.5	3883.6	3876.5
5°	3883.6	3869.0	3827.8	3857.5	3850.3
7.5°	3857.5	3835.4	3794.1	3824.3	3816.7
10°	3816.7	3790.6	3745.8	3775.5	3764.4
12.5°	3760.4	3738.2	3693.5	3712.0	3704.6
15°	3697.1	3674.9	3626.1	3641.2	3622.5
17.5°	3618.6	3596.4	3547.7	3566.3	3547.7
20°	3532.6	3510.4	3458.1	3469.2	3454.5
22.5°	3447.0	3413.4	3364.6	3364.6	3357.1
25°	3346.0	3316.2	3252.9	3260.0	3252.9
27.5°	3233.8	3207.7	3159.4	3148.3	3129.7
30°	3122.2	3092.0	3036.1	3025.0	3010.0
32.5°	3002.5	2980.3	2920.4	2897.9	2882.8
35°	2886.8	2849.6	2789.7	2767.2	2748.5
37.5°	2756.1	2722.4	2662.5	2636.4	2617.8
40°	2621.7	2591.6	2531.7	2498.5	2483.5
42.5°	2490.9	2460.9	2401.4	2363.8	2341.7
45°	2349.1	2323.0	2266.7	2225.9	2210.9
47.5°	2210.9	2184.7	2124.8	2083.7	2061.5
50°	2065.1	2046.4	1994.1	1941.9	1923.2
52.5°	1923.2	1897.1	1848.7	1807.6	1781.4
55°	1777.8	1755.2	1710.4	1665.7	1647.1
57.5°	1632.0	1613.4	1564.7	1519.9	1504.8
60°	1486.2	1471.5	1419.2	1378.0	1367.0
62.5°	1344.3	1318.2	1280.9	1243.7	1228.7
65°	1198.9	1176.3	1139.1	1105.5	1086.8
67.5°	1049.6	1030.6	997.2	971.2	956.1
70°	911.3	896.2	862.6	836.4	821.8
72.5°	769.4	754.3	735.7	709.6	698.6
75°	627.3	620.0	601.1	578.9	586.4
77.5°	500.4	485.4	477.9	466.8	455.7
80°	373.6	369.6	362.1	351.0	343.6
82.5°	254.0	254.0	250.4	235.3	235.3
85°	152.9	149.4	145.8	134.3	130.8
87.5°	67.3	59.8	52.3	41.3	37.3
90°	3.8	45.7	124.3	116.8	120.5
92.5°	78.6	106.6	110.3	114.2	114.2
95°	185.2	220.8	227.1	227.1	220.8
97.5°	308.3	341.4	355.3	355.3	355.3
100°	450.5	479.6	489.7	489.7	486.0
102.5°	600.2	621.7	635.7	639.6	635.7
105°	763.9	774.0	781.6	787.9	787.9
107.5°	926.2	941.5	941.5	944.0	926.2
110°	1083.6	1103.9	1103.9	1103.9	1093.8

TEST NUMBER: P910976

CATALOG NUMBER: DFN2DIP-HX4F0-090D120US850-FLLFLL

CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	1253.6	1275.2	1271.4	1261.3	1253.6
115°	1421.1	1441.5	1435.0	1431.3	1421.1
117.5°	1587.3	1615.3	1597.5	1587.3	1577.2
120°	1754.9	1782.7	1754.9	1754.9	1743.5
122.5°	1907.1	1942.6	1924.9	1914.7	1907.1
125°	2067.0	2098.7	2088.6	2077.2	2073.3
127.5°	2223.1	2262.4	2248.4	2233.2	2223.1
130°	2368.9	2414.6	2408.3	2400.7	2386.7
132.5°	2532.6	2568.2	2570.7	2552.9	2542.8
135°	2673.5	2712.8	2720.5	2716.6	2706.5
137.5°	2830.8	2862.6	2868.9	2866.3	2851.1
140°	2969.1	3000.8	3018.6	3018.6	3004.6
142.5°	3111.3	3143.0	3153.1	3156.9	3143.0
145°	3245.7	3271.1	3291.4	3295.3	3281.3
147.5°	3366.3	3398.0	3413.3	3419.6	3405.6
150°	3490.7	3512.2	3526.2	3537.6	3526.2
152.5°	3601.0	3622.5	3640.4	3654.4	3640.4
155°	3711.4	3721.6	3733.0	3750.7	3739.3
157.5°	3806.6	3814.2	3820.5	3845.9	3828.2
160°	3891.6	3899.2	3903.0	3924.6	3909.3
162.5°	3970.2	3970.2	3974.1	3998.2	3980.4
165°	4037.5	4033.8	4033.8	4059.1	4041.3
167.5°	4098.4	4087.0	4087.0	4112.4	4094.6
170°	4144.1	4133.9	4130.1	4155.5	4133.9
172.5°	4175.8	4165.6	4161.9	4187.3	4165.6
175°	4201.2	4191.0	4183.5	4208.8	4187.3
177.5°	4215.2	4205.0	4197.3	4219.0	4197.3
180°	4208.8	4208.8	4208.8	4208.8	4208.8

TEST NUMBER: P910976

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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	10.54	11.37	11.54	12.37	13.70	10.11	10.93	11.10	11.94	13.27
	3H	12.20	12.94	13.20	13.95	15.31	11.73	12.47	12.73	13.48	14.83
	4H	12.79	13.49	13.80	14.50	15.86	12.31	13.01	13.33	14.03	15.39
	6H	13.19	13.83	14.21	14.85	16.22	12.71	13.35	13.74	14.38	15.75
	8H	13.29	13.90	14.32	14.94	16.31	12.81	13.43	13.85	14.47	15.83
	12H	13.34	13.92	14.37	14.95	16.35	12.86	13.44	13.89	14.47	15.86
4H	2H	11.00	11.70	12.02	12.72	14.08	10.65	11.35	11.68	12.37	13.73
	3H	12.86	13.45	13.90	14.49	15.87	12.47	13.05	13.50	14.10	15.47
	4H	13.58	14.11	14.62	15.15	16.55	13.17	13.71	14.21	14.74	16.14
	6H	14.09	14.55	15.14	15.61	17.00	13.68	14.14	14.73	15.20	16.59
	8H	14.24	14.67	15.29	15.72	17.13	13.83	14.26	14.88	15.31	16.72
	12H	14.31	14.70	15.38	15.77	17.18	13.89	14.28	14.96	15.35	16.76
8H	4H	13.77	14.20	14.82	15.25	16.66	13.41	13.84	14.46	14.89	16.30
	6H	14.40	14.76	15.48	15.85	17.26	14.04	14.39	15.11	15.49	16.89
	8H	14.62	14.94	15.70	16.01	17.44	14.25	14.57	15.33	15.65	17.07
	12H	14.75	15.03	15.84	16.10	17.57	14.37	14.64	15.45	15.72	17.18
12H	4H	13.76	14.14	14.82	15.21	16.62	13.40	13.79	14.47	14.86	16.27
	6H	14.43	14.74	15.51	15.82	17.25	14.08	14.39	15.16	15.47	16.90
	8H	14.67	14.95	15.76	16.02	17.49	14.32	14.59	15.40	15.66	17.13