

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: P929408

Luminaire Tested: DFN2DIP-HX4F0-110D080US940-FLLONL

Issue Date: 12/12/2024

Test Information

Test Method: LM-79-2019
Report Number: P929408
REPORT IS A COMBINATION OF REPORTS P900905 AND P896187
Test Lab: INNOVATION CENTER
Issue Date: 12/12/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-HX4F0-110D080US940-FLLONL
Description: 4 foot, Hexagon Define Geo, with Direct Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

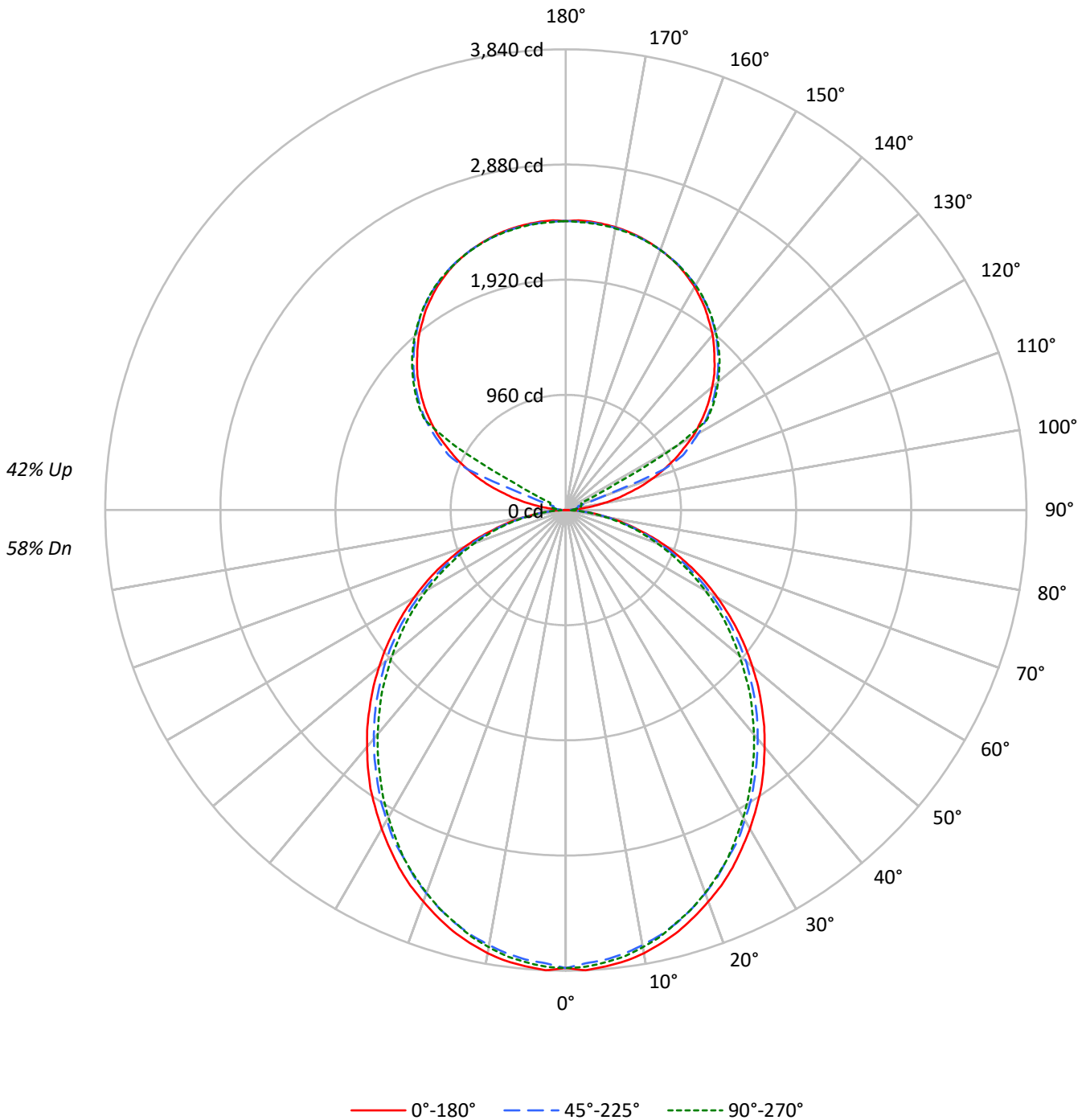
Summary

Lumens per Lamp: N/A
Luminaire Lumens: 16778.5 lumens
Efficiency: N/A
Efficacy: 98.3 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): 170.6
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

TEST NUMBER: P929408
CATALOG NUMBER: DFN2DIP-HX4F0-110D080US940-FLLONL

Luminous Intensity Polar Plot





TEST NUMBER: P929408
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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	109	109	109	109	102	102	102	102	88	88	88	75	75	75	63	63	63	58			58
1	100	95	91	88	93	89	85	82	77	74	72	66	64	63	56	55	54	49			49
2	91	83	77	72	84	78	72	68	67	63	60	58	55	52	49	47	45	41			41
3	83	73	66	60	77	68	62	57	60	54	50	51	47	44	44	41	38	35			35
4	76	65	57	51	70	61	54	48	53	47	43	46	41	38	39	36	33	30			30
5	70	58	50	43	65	54	47	41	47	42	37	41	37	33	35	32	29	26			26
6	64	52	44	38	60	49	41	36	43	37	32	37	32	29	32	28	25	23			23
7	59	47	39	33	55	44	37	32	39	33	29	34	29	26	29	26	23	20			20
8	55	43	35	29	51	40	33	28	35	30	25	31	26	23	27	23	20	18			18
9	51	39	31	26	48	37	30	25	33	27	23	29	24	21	25	21	18	16			16
10	48	36	28	24	45	34	27	23	30	24	21	26	22	19	23	19	17	15			15

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	2839	2839	2839
5°	2844	2800	2818
10°	2821	2762	2780
15°	2780	2717	2721
20°	2724	2654	2660
25°	2668	2579	2589
30°	2599	2509	2500
35°	2533	2426	2405
40°	2451	2343	2315
45°	2370	2259	2223
50°	2282	2171	2116
55°	2189	2070	2018
60°	2084	1949	1905
65°	1970	1824	1772
70°	1825	1672	1630
75°	1623	1490	1498
80°	1381	1258	1246
85°	1003	857	829

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°
 Vertical Angle: 45°
 Luminance: 2370 cd/sqm



TEST NUMBER: P929408

CATALOG NUMBER: DFN2DIP-HX4F0-110D080US940-FLONL

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	359.3	2.1
10°-20°	1011.1	6.0
20°-30°	1485.8	8.9
30°-40°	1725.7	10.3
40°-50°	1723.6	10.3
50°-60°	1502.9	9.0
60°-70°	1111.0	6.6
70°-80°	628.6	3.7
80°-90°	170.1	1.0
90°-100°	79.4	0.5
100°-110°	296.0	1.8
110°-120°	785.1	4.7
120°-130°	1302.2	7.8
130°-140°	1383.2	8.2
140°-150°	1285.6	7.7
150°-160°	1033.6	6.2
160°-170°	666.0	4.0
170°-180°	229.2	1.4
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0°-30°	2856.2	17.0
0°-40°	4582.0	27.3
0°-60°	7808.4	46.5
0°-90°	9718.1	57.9
90°-120°	1160.6	6.9
90°-150°	5131.6	30.6
90°-180°	7060.0	42.1
0°-180°	16778.5	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	3818	3818	3818	3818	3818	
5°	3818	3804	3763	3792	3785	362
15°	3634	3613	3565	3580	3561	1024
25°	3289	3260	3198	3205	3198	1514
35°	2838	2801	2742	2720	2702	1772
45°	2309	2284	2228	2188	2173	1782
55°	1748	1726	1682	1637	1619	1563
65°	1179	1156	1120	1087	1068	1165
75°	617	610	591	569	576	658
85°	150	147	143	132	128	168
90°	2	21	35	44	47	16
95°	113	56	68	77	75	134
105°	530	582	106	125	132	566
115°	1002	1032	1075	268	143	986
125°	1417	1439	1472	1485	1490	1263
135°	1753	1781	1797	1814	1811	1354
145°	2034	2032	2062	2074	2065	1272
155°	2239	2224	2245	2255	2241	1032
165°	2360	2349	2354	2366	2354	667
175°	2414	2401	2405	2417	2400	230
180°	2408	2408	2408	2408	2408	



TEST NUMBER: P929408

CATALOG NUMBER: DFN2DIP-HX4F0-110D080US940-FLLONL

CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	3817.9	3817.9	3817.9	3817.9	3817.9
2.5°	3840.1	3821.8	3781.3	3817.9	3810.9
5°	3817.9	3803.5	3763.0	3792.2	3785.2
7.5°	3792.2	3770.4	3729.9	3759.5	3752.1
10°	3752.1	3726.3	3682.4	3711.5	3700.6
12.5°	3696.8	3675.0	3631.0	3649.3	3641.9
15°	3634.5	3612.6	3564.7	3579.5	3561.2
17.5°	3557.3	3535.5	3487.6	3505.9	3487.6
20°	3472.8	3451.0	3399.6	3410.5	3396.1
22.5°	3388.7	3355.5	3307.6	3307.6	3300.2
25°	3289.3	3260.2	3197.8	3204.9	3197.8
27.5°	3179.1	3153.4	3105.9	3095.0	3076.7
30°	3069.3	3039.7	2984.7	2973.8	2959.0
32.5°	2951.6	2929.9	2871.0	2848.8	2834.0
35°	2837.9	2801.3	2742.5	2720.2	2702.0
37.5°	2709.4	2676.3	2617.5	2591.7	2573.4
40°	2577.3	2547.7	2488.9	2456.2	2441.4
42.5°	2448.8	2419.2	2360.8	2323.7	2302.0
45°	2309.4	2283.6	2228.3	2188.3	2173.4
47.5°	2173.4	2147.8	2088.9	2048.4	2026.5
50°	2030.1	2011.8	1960.3	1909.0	1890.7
52.5°	1890.7	1864.9	1817.4	1776.9	1751.2
55°	1747.7	1725.5	1681.5	1637.4	1619.2
57.5°	1604.4	1586.1	1538.2	1494.1	1479.3
60°	1461.0	1446.6	1395.2	1354.7	1343.8
62.5°	1321.6	1295.9	1259.2	1222.7	1207.9
65°	1178.6	1156.4	1119.8	1086.7	1068.4
67.5°	1031.8	1013.1	980.4	954.7	939.9
70°	895.8	881.0	847.9	822.2	807.8
72.5°	756.4	741.6	723.3	697.6	686.7
75°	616.6	609.6	590.9	569.1	576.5
77.5°	491.9	477.1	469.7	458.8	448.0
80°	367.3	363.4	356.0	345.1	337.7
82.5°	249.7	249.7	246.2	231.4	231.4
85°	150.4	146.8	143.3	132.0	128.5
87.5°	66.2	58.8	51.4	40.5	36.6
90°	1.7	20.9	34.8	43.6	47.0
92.5°	43.6	36.7	41.8	45.3	47.0
95°	113.2	55.7	67.9	76.8	74.9
97.5°	203.8	61.0	88.8	94.2	95.8
100°	308.5	69.8	99.4	113.2	116.7
102.5°	423.4	420.0	102.8	121.8	127.3
105°	529.8	582.1	106.3	125.4	132.5
107.5°	653.5	696.9	109.9	128.9	135.9
110°	772.1	808.5	305.1	130.8	137.6



TEST NUMBER: P929408

CATALOG NUMBER: DFN2DIP-HX4F0-110D080US940-FLLONL

CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	883.6	914.8	885.3	134.1	139.5
115°	1002.0	1031.6	1075.2	268.4	143.0
117.5°	1104.8	1139.6	1169.4	920.0	463.6
120°	1219.9	1245.9	1277.4	1298.3	1063.0
122.5°	1317.3	1345.3	1380.3	1390.6	1392.5
125°	1416.7	1439.4	1472.5	1484.7	1489.9
127.5°	1507.3	1531.7	1558.1	1575.4	1577.1
130°	1592.8	1620.7	1639.8	1659.0	1657.3
132.5°	1679.9	1702.6	1721.7	1737.4	1735.7
135°	1753.1	1781.1	1796.6	1814.2	1810.7
137.5°	1829.8	1850.6	1868.2	1885.6	1880.4
140°	1904.6	1918.7	1937.8	1953.5	1944.7
142.5°	1967.6	1979.7	2002.3	2016.2	2007.4
145°	2033.8	2031.9	2061.5	2073.7	2065.0
147.5°	2091.1	2085.9	2115.5	2124.2	2117.3
150°	2147.0	2134.7	2162.7	2173.0	2164.3
152.5°	2194.0	2180.0	2206.1	2216.7	2204.5
155°	2239.3	2223.8	2244.6	2255.0	2241.2
157.5°	2275.8	2262.0	2277.7	2289.9	2275.8
160°	2307.3	2296.8	2307.3	2317.7	2305.5
162.5°	2335.1	2324.7	2333.4	2345.6	2329.9
165°	2359.5	2349.2	2354.3	2366.5	2354.3
167.5°	2378.7	2368.2	2373.5	2385.7	2370.0
170°	2394.5	2383.9	2387.4	2399.7	2383.9
172.5°	2404.8	2394.5	2398.0	2410.2	2394.5
175°	2413.5	2401.3	2404.8	2417.0	2399.7
177.5°	2417.0	2404.8	2406.6	2418.8	2403.1
180°	2408.3	2408.3	2408.3	2408.3	2408.3



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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	11.60	12.54	12.48	13.44	14.60	11.17	12.10	12.05	13.01	14.16
	3H	13.27	14.11	14.16	15.02	16.20	12.79	13.63	13.69	14.55	15.73
	4H	13.86	14.65	14.77	15.57	16.76	13.38	14.18	14.30	15.10	16.29
	6H	14.26	15.00	15.19	15.92	17.12	13.79	14.52	14.71	15.45	16.65
	8H	14.37	15.07	15.30	16.01	17.21	13.89	14.59	14.83	15.54	16.74
	12H	14.42	15.09	15.36	16.02	17.25	13.94	14.60	14.88	15.54	16.77
4H	2H	12.07	12.87	12.99	13.79	14.98	11.73	12.52	12.64	13.44	14.63
	3H	13.94	14.61	14.87	15.56	16.76	13.55	14.21	14.48	15.17	16.37
	4H	14.66	15.27	15.60	16.22	17.44	14.26	14.86	15.20	15.81	17.04
	6H	15.18	15.71	16.14	16.68	17.90	14.77	15.30	15.73	16.27	17.49
	8H	15.33	15.82	16.29	16.79	18.03	14.92	15.41	15.88	16.38	17.62
	12H	15.41	15.85	16.39	16.83	18.08	14.99	15.43	15.96	16.41	17.66
8H	4H	14.87	15.35	15.82	16.32	17.56	14.51	14.99	15.46	15.96	17.20
	6H	15.50	15.91	16.48	16.91	18.15	15.14	15.54	16.12	16.55	17.79
	8H	15.72	16.08	16.71	17.08	18.34	15.35	15.71	16.34	16.71	17.97
	12H	15.86	16.17	16.85	17.16	18.47	15.47	15.79	16.47	16.78	18.08
12H	4H	14.86	15.30	15.83	16.28	17.53	14.50	14.94	15.48	15.93	17.17
	6H	15.53	15.89	16.52	16.89	18.14	15.18	15.54	16.17	16.53	17.79
	8H	15.78	16.09	16.77	17.08	18.39	15.42	15.74	16.42	16.72	18.03