

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: P921817

Luminaire Tested: DFN2DIP-HX4F0-050D120US940-RLLFLL

Issue Date: 11/21/2024

**Test Information**

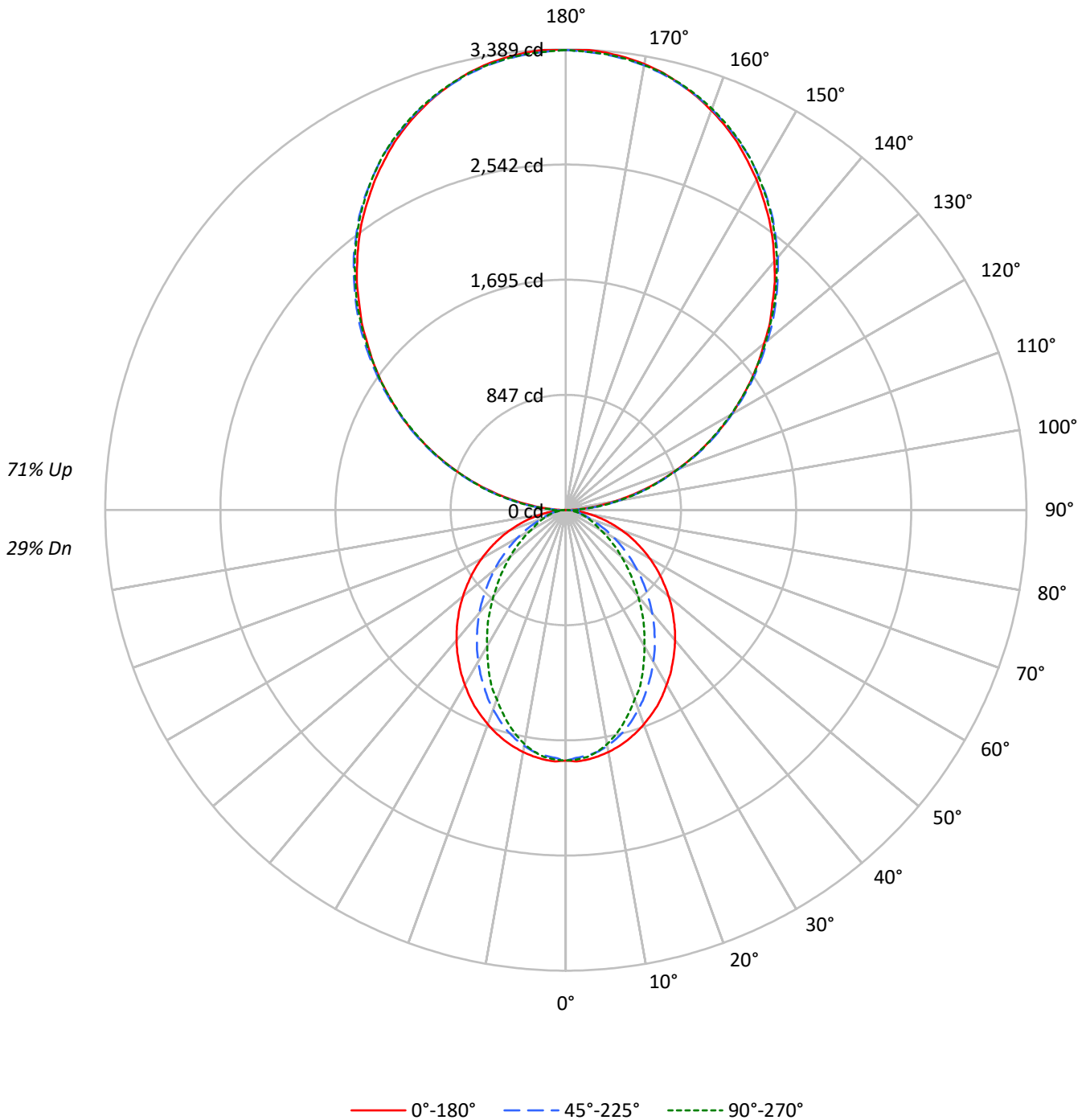
Test Method: LM-79-2019  
Report Number: P921817  
REPORT IS A COMBINATION OF REPORTS P899446 AND P896188  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-HX4F0-050D120US940-RLLFLL  
Description: 4 foot, Hexagon Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 13259.7 lumens  
Efficiency: N/A  
Efficacy: 113.4 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): 116.9  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9957  
Total Harmonic Distortion (THDi): 0.049  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT

TEST NUMBER: P921817  
CATALOG NUMBER: DFN2DIP-HX4F0-050D120US940-RLFL

### Luminous Intensity Polar Plot





TEST NUMBER: P921817  
 CATALOG NUMBER: DFN2DIP-HX4F0-050D120US940-RLLFLL

**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	102	102	102	102	91	91	91	91	71	71	71	53	53	53	37	37	37	29			29
1	93	89	86	82	83	80	77	74	63	61	59	47	46	45	33	32	31	25			25
2	85	78	72	68	76	70	65	61	55	52	49	42	40	38	29	28	27	21			21
3	78	69	62	56	69	62	56	51	49	45	42	37	34	32	26	24	23	18			18
4	71	61	54	48	64	55	49	44	44	39	36	33	30	28	23	22	20	16			16
5	65	54	47	41	58	49	42	38	39	34	31	30	27	24	21	19	18	14			14
6	60	49	41	36	54	44	37	33	35	30	27	27	24	21	19	17	16	12			12
7	56	44	36	31	50	40	33	29	32	27	24	25	21	19	18	16	14	11			11
8	52	40	32	27	46	36	30	25	29	24	21	22	19	17	16	14	13	10			10
9	48	36	29	24	43	33	27	22	27	22	19	21	17	15	15	13	11	9			9
10	45	33	26	22	40	30	24	20	24	20	17	19	16	14	14	12	10	8			8

**AVERAGE LUMINANCE (cd/sqm):**

	0°	45°	90°
0°	1370	1370	1370
5°	1372	1349	1357
10°	1359	1322	1313
15°	1340	1279	1245
20°	1316	1219	1161
25°	1291	1151	1080
30°	1257	1082	978
35°	1223	1008	888
40°	1190	931	784
45°	1150	845	691
50°	1110	759	599
55°	1067	667	511
60°	1018	571	421
65°	962	473	379
70°	893	381	343
75°	808	336	312
80°	683	283	271
85°	478	190	204

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 90°  
 Vertical Angle: 90°  
 Luminance: 2551 cd/sqm



TEST NUMBER: P921817

CATALOG NUMBER: DFN2DIP-HX4F0-050D120US940-RLFL

**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	172.7	1.3
10°-20°	474.1	3.6
20°-30°	665.6	5.0
30°-40°	725.6	5.5
40°-50°	666.9	5.0
50°-60°	523.7	3.9
60°-70°	340.9	2.6
70°-80°	175.5	1.3
80°-90°	54.4	0.4
90°-100°	209.4	1.6
100°-110°	665.4	5.0
110°-120°	1138.7	8.6
120°-130°	1497.5	11.3
130°-140°	1680.9	12.7
140°-150°	1648.3	12.4
150°-160°	1382.7	10.4
160°-170°	917.0	6.9
170°-180°	320.5	2.4
0°-30°	1312.4	9.9
0°-40°	2038.0	15.4
0°-60°	3228.6	24.3
0°-90°	3799.4	28.7
90°-120°	2013.4	15.2
90°-150°	6840.1	51.6
90°-180°	9460.0	71.3
0°-180°	13259.7	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	1843	1843	1843	1843	1843	
5°	1843	1834	1813	1828	1823	175
15°	1753	1734	1678	1646	1629	494
25°	1591	1538	1427	1359	1334	732
35°	1371	1286	1139	1034	997	858
45°	1121	1009	834	715	675	865
55°	852	722	542	442	410	761
65°	575	440	290	234	228	570
75°	307	190	133	122	120	324
85°	72	37	32	32	32	82
90°	3	37	100	94	97	13
95°	149	178	183	183	178	166
105°	614	622	628	634	634	648
115°	1143	1159	1154	1151	1143	1130
125°	1662	1688	1679	1670	1667	1485
135°	2150	2181	2188	2184	2176	1662
145°	2610	2630	2646	2650	2638	1631
155°	2984	2992	3002	3016	3007	1374
165°	3246	3243	3243	3264	3250	916
175°	3378	3370	3364	3384	3367	321
180°	3384	3384	3384	3384	3384	



TEST NUMBER: P921817

CATALOG NUMBER: DFN2DIP-HX4F0-050D120US940-RLFL

**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°
0°	1842.7	1842.7	1842.7	1842.7	1842.7
2.5°	1851.0	1842.7	1824.4	1841.1	1837.7
5°	1842.7	1834.4	1812.7	1827.6	1822.7
7.5°	1827.6	1817.8	1794.4	1801.0	1792.6
10°	1807.7	1796.0	1762.7	1757.7	1747.7
12.5°	1782.7	1767.7	1722.6	1712.7	1694.2
15°	1752.7	1734.3	1677.7	1646.0	1629.3
17.5°	1717.6	1691.0	1620.9	1584.2	1557.5
20°	1677.7	1644.2	1560.8	1519.3	1482.5
22.5°	1634.3	1595.9	1499.1	1442.5	1417.6
25°	1590.9	1537.5	1427.4	1359.1	1334.0
27.5°	1539.3	1482.5	1360.8	1282.4	1244.0
30°	1484.3	1420.8	1287.4	1202.4	1157.3
32.5°	1430.8	1354.1	1217.5	1117.3	1075.6
35°	1370.8	1285.8	1139.1	1033.9	997.2
37.5°	1312.4	1220.7	1065.7	950.5	908.9
40°	1250.7	1150.8	988.8	870.5	827.2
42.5°	1187.4	1080.7	912.2	788.7	747.2
45°	1120.7	1008.9	833.8	715.3	675.3
47.5°	1057.3	939.0	758.8	640.3	603.7
50°	987.3	868.9	685.5	570.2	535.4
52.5°	918.8	793.7	615.4	505.3	473.7
55°	852.1	722.0	541.9	441.9	410.3
57.5°	783.8	650.4	477.0	383.6	356.9
60°	713.7	580.3	408.5	323.6	296.9
62.5°	645.4	512.0	350.2	270.2	256.9
65°	575.3	440.2	290.2	233.5	228.5
67.5°	508.6	373.5	233.5	205.1	200.1
70°	438.6	308.5	193.4	176.7	170.0
72.5°	371.9	248.4	161.8	148.5	145.1
75°	306.8	190.0	133.4	121.7	120.1
77.5°	241.8	135.0	105.1	98.4	95.0
80°	181.7	96.8	80.0	73.4	73.4
82.5°	126.7	65.1	55.0	51.6	51.6
85°	71.7	36.6	31.7	31.7	31.7
87.5°	26.8	13.3	13.3	11.7	11.7
90°	3.0	36.7	100.0	93.9	96.9
92.5°	63.2	85.7	88.7	91.8	91.8
95°	148.9	177.5	182.6	182.6	177.5
97.5°	247.9	274.5	285.7	285.7	285.7
100°	362.2	385.7	393.8	393.8	390.7
102.5°	482.6	499.9	511.1	514.2	511.1
105°	614.2	622.3	628.5	633.6	633.6
107.5°	744.8	757.1	757.1	759.0	744.8
110°	871.3	887.6	887.6	887.6	879.5



TEST NUMBER: P921817

CATALOG NUMBER: DFN2DIP-HX4F0-050D120US940-RLFL

**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°
112.5°	1008.0	1025.4	1022.3	1014.1	1008.0
115°	1142.6	1159.0	1153.9	1150.8	1142.6
117.5°	1276.3	1298.8	1284.5	1276.3	1268.2
120°	1411.0	1433.4	1411.0	1411.0	1401.9
122.5°	1533.5	1562.0	1547.7	1539.5	1533.5
125°	1662.0	1687.5	1679.4	1670.2	1667.1
127.5°	1787.5	1819.1	1807.9	1795.6	1787.5
130°	1904.8	1941.5	1936.4	1930.3	1919.0
132.5°	2036.4	2065.0	2067.0	2052.7	2044.6
135°	2149.6	2181.3	2187.5	2184.3	2176.2
137.5°	2276.2	2301.7	2306.8	2304.7	2292.5
140°	2387.4	2412.9	2427.1	2427.1	2415.9
142.5°	2501.7	2527.2	2535.3	2538.3	2527.2
145°	2609.8	2630.2	2646.5	2649.6	2638.4
147.5°	2706.7	2732.2	2744.5	2749.6	2738.4
150°	2806.7	2824.0	2835.3	2844.5	2835.3
152.5°	2895.5	2912.8	2927.1	2938.4	2927.1
155°	2984.2	2992.4	3001.6	3015.9	3006.7
157.5°	3060.8	3066.9	3071.9	3092.4	3078.1
160°	3129.1	3135.3	3138.3	3155.7	3143.4
162.5°	3192.3	3192.3	3195.4	3214.8	3200.5
165°	3246.4	3243.4	3243.4	3263.7	3249.5
167.5°	3295.4	3286.2	3286.2	3306.6	3292.4
170°	3332.1	3323.9	3320.9	3341.3	3323.9
172.5°	3357.6	3349.4	3346.4	3366.8	3349.4
175°	3378.1	3369.9	3363.8	3384.1	3366.8
177.5°	3389.3	3381.1	3374.9	3392.3	3374.9
180°	3384.1	3384.1	3384.1	3384.1	3384.1



TEST NUMBER: P921817  
 CATALOG NUMBER: DFN2DIP-HX4F0-050D120US940-RLLFLL

**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	5.82	6.50	6.94	7.62	9.16	1.79	2.47	2.92	3.59	5.14
	3H	7.48	8.09	8.62	9.22	10.78	2.97	3.58	4.10	4.70	6.27
	4H	8.09	8.67	9.23	9.79	11.36	3.41	3.99	4.56	5.12	6.69
	6H	8.50	9.03	9.65	10.16	11.74	3.73	4.26	4.88	5.39	6.97
	8H	8.62	9.13	9.78	10.27	11.85	3.82	4.32	4.97	5.46	7.04
	12H	8.68	9.16	9.84	10.30	11.89	3.86	4.34	5.01	5.47	7.07
4H	2H	5.82	6.40	6.97	7.52	9.09	2.37	2.95	3.52	4.07	5.64
	3H	7.63	8.12	8.79	9.27	10.85	3.71	4.19	4.86	5.34	6.92
	4H	8.32	8.76	9.48	9.90	11.51	4.25	4.69	5.41	5.83	7.43
	6H	8.83	9.21	9.99	10.37	11.96	4.66	5.04	5.83	6.20	7.80
	8H	9.00	9.36	10.17	10.51	12.12	4.79	5.14	5.95	6.30	7.91
	12H	9.09	9.41	10.27	10.58	12.19	4.85	5.17	6.03	6.33	7.95
8H	4H	8.28	8.63	9.44	9.79	11.39	4.52	4.87	5.68	6.03	7.64
	6H	8.84	9.13	10.02	10.33	11.93	5.04	5.33	6.22	6.52	8.13
	8H	9.06	9.31	10.25	10.49	12.11	5.23	5.48	6.41	6.65	8.28
	12H	9.19	9.41	10.38	10.58	12.24	5.34	5.56	6.53	6.74	8.39
12H	4H	8.22	8.54	9.40	9.71	11.32	4.52	4.84	5.70	6.00	7.62
	6H	8.82	9.07	10.00	10.24	11.87	5.08	5.34	6.27	6.51	8.14
	8H	9.03	9.25	10.22	10.42	12.08	5.29	5.51	6.48	6.68	8.34