

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: P921831

Luminaire Tested: DFN2DIP-HX4F0-060D100US940-RLLFLL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P921831
REPORT IS A COMBINATION OF REPORTS P899412 AND P896188
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-HX4F0-060D100US940-RLLFLL
Description: 4 foot, Hexagon Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Frosted Lens
Light Source: -
Ballast/Driver: -

Summary

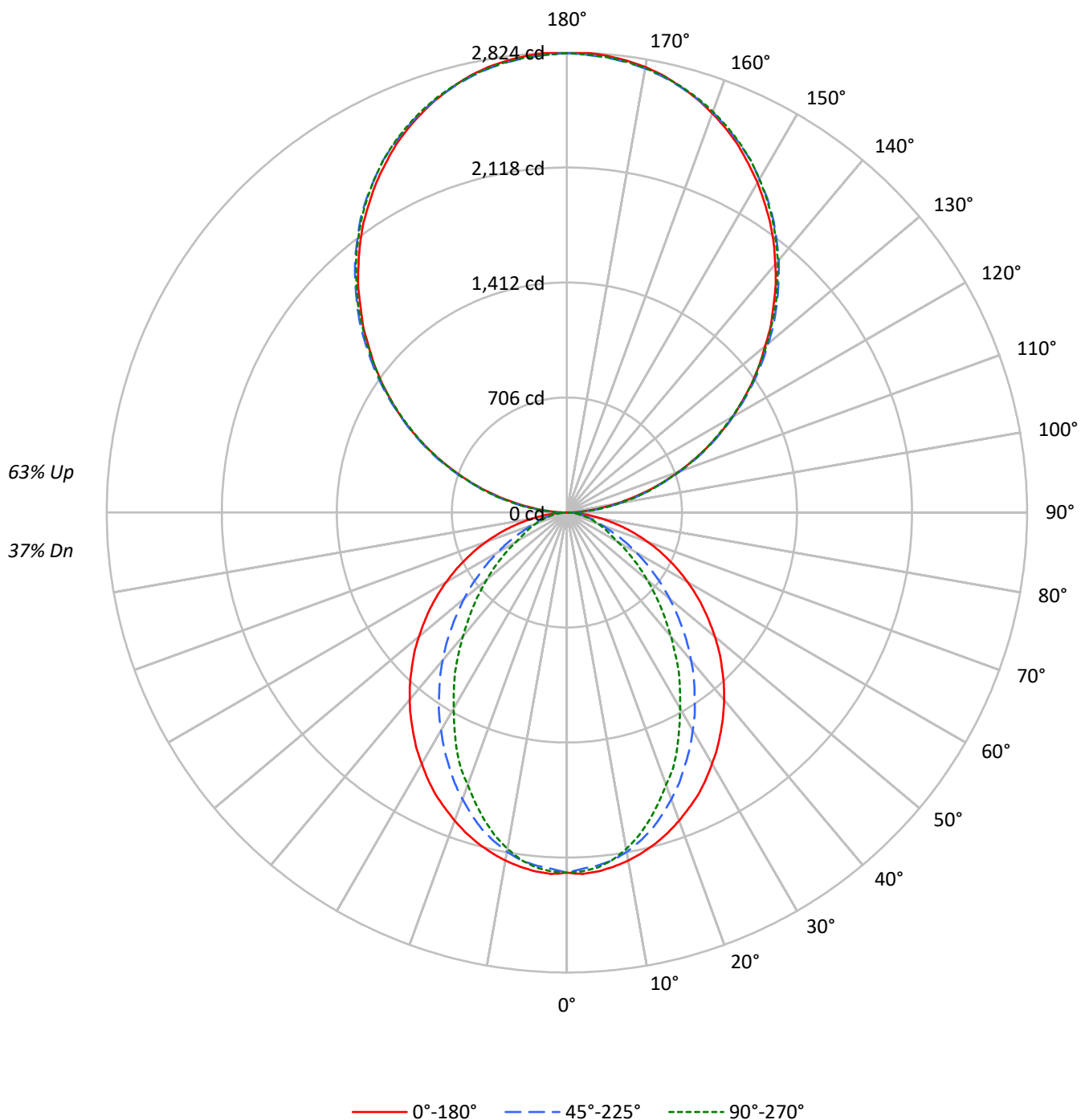
Lumens per Lamp: N/A
Luminaire Lumens: 12439.4 lumens
Efficiency: N/A
Efficacy: 111.2 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16
Luminous Opening: Rectangular w/ Sides (W: 3.54' x L: 4.09' x H: 0.1')
CIE Type: Semi-Indirect

Input Watts (W): 111.9
Input Voltage (V):
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.099
Total Harmonic Distortion (THDi): 0.979
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 24 FT

TEST NUMBER: P921831

CATALOG NUMBER: DFN2DIP-HX4F0-060D100US940-RLLFLL

Luminous Intensity Polar Plot



TEST NUMBER: P921831

CATALOG NUMBER: DFN2DIP-HX4F0-060D100US940-RLFL

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	104	104	104	104	94	94	94	94	76	76	76	59	59	59	44	44	44
1	95	91	87	84	86	83	80	77	67	65	63	53	51	50	39	38	38
2	87	80	74	69	79	73	68	63	59	56	53	47	44	42	35	34	32
3	79	70	64	58	72	64	58	53	52	48	45	41	39	36	31	29	28
4	73	63	55	49	66	57	51	46	47	42	38	37	34	31	28	26	24
5	67	56	48	42	60	51	44	39	42	37	33	33	30	27	26	23	21
6	62	50	42	37	56	46	39	34	38	33	29	30	27	24	23	21	19
7	57	45	38	32	52	41	35	30	34	29	26	28	24	21	21	19	17
8	53	41	34	29	48	38	31	27	31	26	23	25	22	19	20	17	15
9	49	38	30	25	45	34	28	24	29	24	20	23	20	17	18	16	14
10	46	34	27	23	42	32	25	21	26	22	18	22	18	16	17	14	13

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	1644	1644	1644
5°	1647	1618	1629
10°	1631	1587	1576
15°	1608	1534	1494
20°	1579	1462	1393
25°	1549	1381	1296
30°	1508	1298	1173
35°	1468	1209	1065
40°	1427	1117	941
45°	1380	1014	829
50°	1332	911	719
55°	1281	800	613
60°	1222	685	505
65°	1154	567	455
70°	1072	458	412
75°	969	404	375
80°	820	339	325
85°	573	227	245

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 90°

Vertical Angle: 90°

Luminance: 2127 cd/sqm

TEST NUMBER: P921831

CATALOG NUMBER: DFN2DIP-HX4F0-060D100US940-RLFL

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	207.2	1.7
10°-20°	568.9	4.6
20°-30°	798.7	6.4
30°-40°	870.7	7.0
40°-50°	800.3	6.4
50°-60°	628.5	5.1
60°-70°	409.1	3.3
70°-80°	210.6	1.7
80°-90°	61.8	0.5
90°-100°	174.5	1.4
100°-110°	554.5	4.5
110°-120°	948.9	7.6
120°-130°	1247.9	10.0
130°-140°	1400.8	11.3
140°-150°	1373.6	11.0
150°-160°	1152.3	9.3
160°-170°	764.1	6.1
170°-180°	267.1	2.1
0°-30°	1574.9	12.7
0°-40°	2445.6	19.7
0°-60°	3874.3	31.1
0°-90°	4555.7	36.6
90°-120°	1677.9	13.5
90°-150°	5700.1	45.8
90°-180°	7884.0	63.4
0°-180°	12439.4	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	2211	2211	2211	2211	2211	
5°	2211	2201	2175	2193	2187	210
15°	2103	2081	2013	1975	1955	593
25°	1909	1845	1713	1631	1601	878
35°	1645	1543	1367	1241	1197	1030
45°	1345	1211	1001	858	810	1039
55°	1022	866	650	530	492	914
65°	690	528	348	280	274	685
75°	368	228	160	146	144	389
85°	86	44	38	38	38	99
90°	3	31	83	78	81	12
95°	124	148	152	152	148	138
105°	512	519	524	528	528	540
115°	952	966	962	959	952	942
125°	1385	1406	1400	1392	1389	1238
135°	1791	1818	1823	1820	1814	1385
145°	2175	2192	2206	2208	2199	1359
155°	2487	2494	2501	2513	2506	1145
165°	2705	2703	2703	2720	2708	763
175°	2815	2808	2803	2820	2806	267
180°	2820	2820	2820	2820	2820	

TEST NUMBER: P921831

CATALOG NUMBER: DFN2DIP-HX4F0-060D100US940-RLFL

CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	2211.3	2211.3	2211.3	2211.3	2211.3
2.5°	2221.3	2211.3	2189.1	2209.3	2205.3
5°	2211.3	2201.3	2175.1	2193.3	2187.3
7.5°	2193.3	2181.3	2153.3	2161.1	2151.2
10°	2169.2	2155.2	2115.3	2109.2	2097.2
12.5°	2139.3	2121.2	2067.1	2055.2	2033.1
15°	2103.2	2081.1	2013.1	1975.1	1955.2
17.5°	2061.2	2029.1	1945.0	1901.0	1869.0
20°	2013.1	1973.0	1873.0	1823.1	1779.0
22.5°	1961.1	1915.0	1798.9	1731.0	1701.0
25°	1909.2	1845.0	1713.0	1631.0	1600.9
27.5°	1847.2	1779.0	1632.9	1538.8	1492.8
30°	1781.1	1704.9	1544.8	1442.9	1388.7
32.5°	1717.0	1624.9	1461.0	1340.8	1290.7
35°	1645.0	1542.9	1366.9	1240.7	1196.6
37.5°	1574.9	1464.7	1278.8	1140.6	1090.7
40°	1500.8	1380.9	1186.6	1044.5	992.6
42.5°	1424.9	1296.8	1094.7	946.5	896.6
45°	1344.8	1210.6	1000.7	858.4	810.4
47.5°	1268.8	1126.8	910.6	768.4	724.4
50°	1184.7	1042.7	822.5	684.3	642.5
52.5°	1102.5	952.4	738.4	606.4	568.4
55°	1022.5	866.5	650.3	530.4	492.3
57.5°	940.6	780.4	572.4	460.3	428.2
60°	856.5	696.4	490.3	388.3	356.2
62.5°	774.5	614.5	420.2	324.2	308.3
65°	690.5	528.2	348.2	280.3	274.1
67.5°	610.4	448.2	280.3	246.1	240.1
70°	526.3	370.2	232.0	212.1	204.0
72.5°	446.3	298.1	194.0	178.2	174.1
75°	368.2	228.0	160.1	146.1	144.2
77.5°	290.3	162.0	126.1	118.1	114.0
80°	218.0	116.1	95.9	88.1	88.1
82.5°	152.0	78.1	66.0	62.0	62.0
85°	86.0	44.0	38.0	38.0	38.0
87.5°	32.1	16.0	16.0	14.0	14.0
90°	2.6	30.6	83.3	78.2	80.8
92.5°	52.7	71.4	74.0	76.5	76.5
95°	124.1	147.9	152.2	152.2	147.9
97.5°	206.6	228.7	238.1	238.1	238.1
100°	301.8	321.4	328.1	328.1	325.7
102.5°	402.2	416.6	426.0	428.5	426.0
105°	511.8	518.6	523.7	528.0	528.0
107.5°	620.6	630.9	630.9	632.6	620.6
110°	726.1	739.7	739.7	739.7	732.9

TEST NUMBER: P921831

CATALOG NUMBER: DFN2DIP-HX4F0-060D100US940-RLLFLL

CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	840.0	854.4	851.9	845.1	840.0
115°	952.3	965.8	961.6	959.0	952.3
117.5°	1063.6	1082.4	1070.4	1063.6	1056.8
120°	1175.8	1194.5	1175.8	1175.8	1168.2
122.5°	1277.8	1301.6	1289.8	1283.0	1277.8
125°	1385.0	1406.2	1399.5	1391.8	1389.3
127.5°	1489.6	1515.9	1506.5	1496.4	1489.6
130°	1587.3	1617.9	1613.7	1608.6	1599.3
132.5°	1697.0	1720.8	1722.5	1710.7	1703.8
135°	1791.4	1817.8	1822.8	1820.3	1813.5
137.5°	1896.8	1918.1	1922.3	1920.7	1910.4
140°	1989.5	2010.7	2022.7	2022.7	2013.3
142.5°	2084.7	2106.0	2112.7	2115.3	2106.0
145°	2174.8	2191.8	2205.5	2208.0	2198.6
147.5°	2255.6	2276.9	2287.1	2291.3	2282.0
150°	2339.0	2353.4	2362.8	2370.3	2362.8
152.5°	2412.9	2427.3	2439.3	2448.6	2439.3
155°	2486.9	2493.7	2501.3	2513.2	2505.5
157.5°	2550.6	2555.7	2560.0	2577.0	2565.1
160°	2607.6	2612.7	2615.2	2629.7	2619.5
162.5°	2660.3	2660.3	2662.8	2679.0	2667.1
165°	2705.4	2702.8	2702.8	2719.8	2707.9
167.5°	2746.2	2738.5	2738.5	2755.6	2743.6
170°	2776.8	2770.0	2767.4	2784.5	2770.0
172.5°	2798.0	2791.2	2788.6	2805.7	2791.2
175°	2815.0	2808.3	2803.2	2820.1	2805.7
177.5°	2824.4	2817.6	2812.5	2826.9	2812.5
180°	2820.1	2820.1	2820.1	2820.1	2820.1

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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	7.48	8.21	8.55	9.28	10.73	3.45	4.18	4.52	5.25	6.70
	3H	9.15	9.80	10.23	10.88	12.35	4.64	5.29	5.71	6.37	7.84
	4H	9.75	10.37	10.84	11.45	12.93	5.08	5.70	6.17	6.78	8.26
	6H	10.17	10.74	11.27	11.82	13.31	5.40	5.97	6.50	7.05	8.54
	8H	10.30	10.84	11.40	11.94	13.42	5.49	6.03	6.59	7.13	8.61
	12H	10.36	10.87	11.46	11.96	13.47	5.53	6.04	6.64	7.14	8.64
4H	2H	7.49	8.11	8.58	9.18	10.66	4.04	4.66	5.13	5.73	7.21
	3H	9.31	9.82	10.41	10.93	12.42	5.38	5.90	6.48	7.00	8.49
	4H	10.00	10.47	11.10	11.56	13.07	5.93	6.40	7.03	7.49	9.00
	6H	10.51	10.91	11.62	12.03	13.53	6.34	6.75	7.46	7.86	9.37
	8H	10.68	11.06	11.80	12.17	13.69	6.47	6.85	7.58	7.96	9.48
	12H	10.77	11.11	11.90	12.24	13.76	6.53	6.87	7.66	8.00	9.52
8H	4H	9.96	10.34	11.07	11.45	12.96	6.20	6.58	7.31	7.69	9.21
	6H	10.52	10.83	11.66	11.98	13.50	6.72	7.03	7.85	8.18	9.70
	8H	10.74	11.01	11.88	12.14	13.68	6.91	7.18	8.05	8.31	9.85
	12H	10.87	11.11	12.02	12.24	13.81	7.02	7.26	8.17	8.39	9.97
12H	4H	9.90	10.25	11.04	11.37	12.89	6.20	6.54	7.33	7.66	9.19
	6H	10.50	10.77	11.64	11.90	13.44	6.76	7.04	7.91	8.17	9.71
	8H	10.71	10.95	11.86	12.08	13.65	6.97	7.21	8.12	8.34	9.91