

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: P921913

Luminaire Tested: DFN2DIP-HX4F0-110D060US940-RLLFLL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P921913
REPORT IS A COMBINATION OF REPORTS P899350 AND P896188
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-HX4F0-110D060US940-RLLFLL
Description: 4 foot, Hexagon Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Frosted Lens
Light Source: -
Ballast/Driver: -

Summary

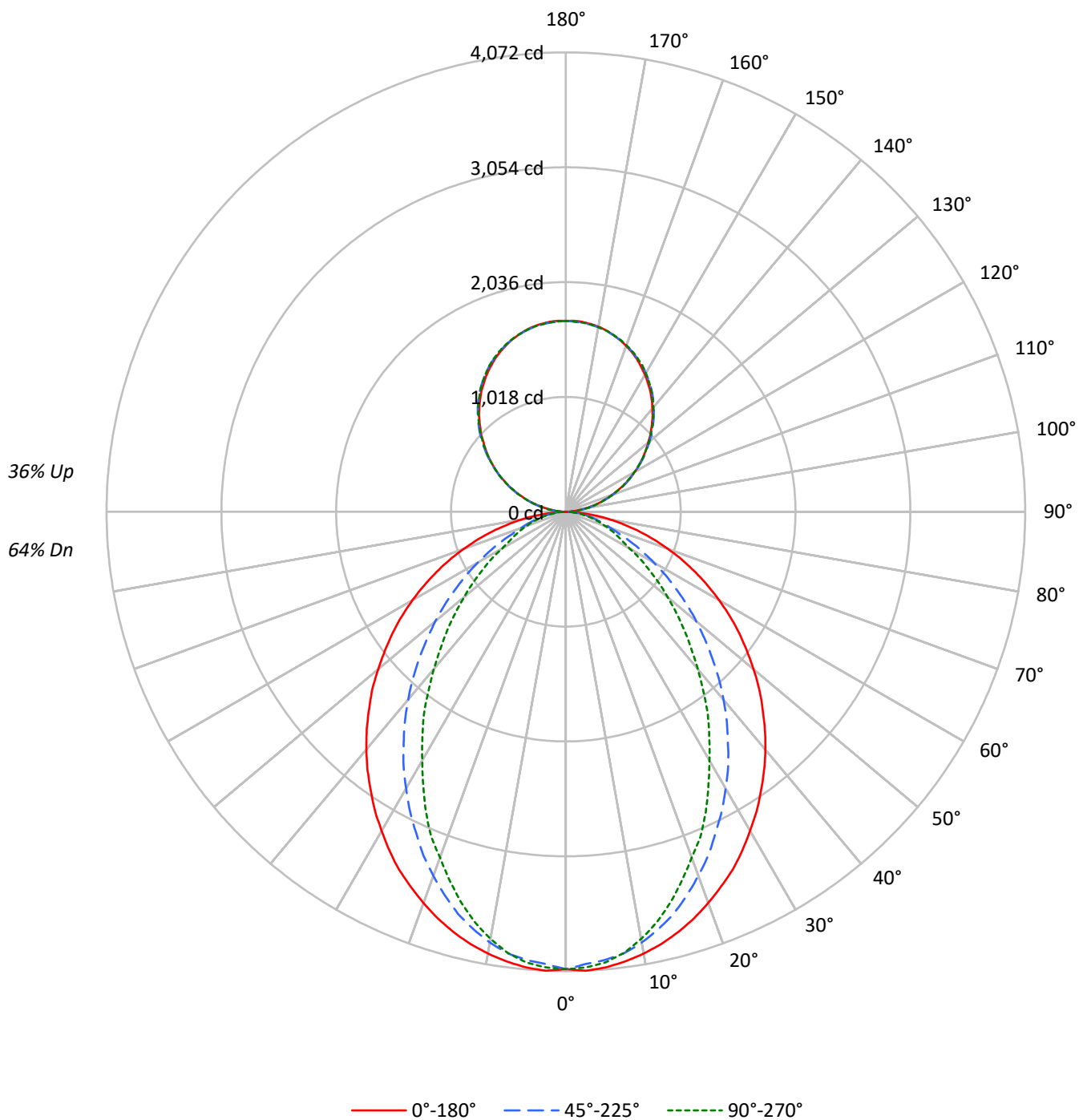
Lumens per Lamp: N/A
Luminaire Lumens: 13072.5 lumens
Efficiency: N/A
Efficacy: 89.4 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16
Luminous Opening: Rectangular w/ Sides (W: 3.54' x L: 4.09' x H: 0.1')
CIE Type: Semi-Direct

Input Watts (W): 146.3
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

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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	110	110	110	110	104	104	104	104	91	91	91	79	79	79	69	69	69
1	101	97	94	90	95	92	88	85	81	78	76	71	69	67	62	61	59
2	93	86	80	75	87	81	76	71	72	68	64	63	60	57	55	53	51
3	85	76	69	63	80	72	65	60	64	59	55	56	52	49	49	47	44
4	78	68	60	54	73	64	57	52	57	52	47	51	46	43	45	41	39
5	72	61	53	47	68	58	50	45	51	46	41	46	41	38	40	37	34
6	67	55	47	41	63	52	45	39	47	41	36	42	37	33	37	33	30
7	62	50	42	36	58	47	40	35	43	37	32	38	33	30	34	30	27
8	58	45	38	32	54	43	36	31	39	33	29	35	30	27	31	27	25
9	54	42	34	29	51	40	33	28	36	30	26	32	28	24	29	25	22
10	50	38	31	26	48	37	30	26	33	28	24	30	25	22	27	23	20

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	3014	3014	3014
5°	3019	2967	2986
10°	2990	2909	2889
15°	2949	2813	2739
20°	2895	2681	2554
25°	2839	2532	2377
30°	2765	2380	2151
35°	2692	2217	1953
40°	2617	2048	1725
45°	2531	1860	1519
50°	2441	1670	1318
55°	2348	1467	1125
60°	2240	1256	926
65°	2116	1040	834
70°	1966	839	755
75°	1777	740	687
80°	1503	622	596
85°	1051	416	449

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°
Vertical Angle: 45°
Luminance: 2531 cd/sqm

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	379.9	2.9
10°-20°	1043.0	8.0
20°-30°	1464.4	11.2
30°-40°	1596.2	12.2
40°-50°	1467.1	11.2
50°-60°	1152.2	8.8
60°-70°	750.0	5.7
70°-80°	386.0	3.0
80°-90°	103.4	0.8
90°-100°	104.7	0.8
100°-110°	332.7	2.5
110°-120°	569.3	4.4
120°-130°	748.8	5.7
130°-140°	840.5	6.4
140°-150°	824.2	6.3
150°-160°	691.4	5.3
160°-170°	458.5	3.5
170°-180°	160.3	1.2
0°-30°	2887.3	22.1
0°-40°	4483.6	34.3
0°-60°	7102.9	54.3
0°-90°	8342.3	63.8
90°-120°	1006.7	7.7
90°-150°	3420.1	26.2
90°-180°	4730.0	36.2
0°-180°	13072.5	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	4054	4054	4054	4054	4054	
5°	4054	4036	3988	4021	4010	384
15°	3856	3815	3691	3621	3584	1087
25°	3500	3382	3140	2990	2935	1610
35°	3016	2829	2506	2275	2194	1888
45°	2466	2220	1834	1574	1486	1904
55°	1875	1588	1192	972	903	1675
65°	1266	968	638	514	502	1255
75°	675	418	294	268	264	714
85°	158	81	70	70	70	181
90°	2	18	50	47	48	13
95°	74	89	91	91	89	83
105°	307	311	314	317	317	324
115°	571	580	577	575	571	565
125°	831	844	840	835	834	743
135°	1075	1091	1094	1092	1088	831
145°	1305	1315	1323	1325	1319	815
155°	1492	1496	1501	1508	1503	687
165°	1623	1622	1622	1632	1625	458
175°	1689	1685	1682	1692	1683	160
180°	1692	1692	1692	1692	1692	

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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	4054.0	4054.0	4054.0	4054.0	4054.0
2.5°	4072.3	4054.0	4013.5	4050.5	4043.1
5°	4054.0	4035.7	3987.8	4020.9	4010.0
7.5°	4020.9	3999.1	3947.7	3962.1	3943.8
10°	3976.9	3951.2	3878.0	3866.7	3845.0
12.5°	3922.0	3888.9	3789.7	3767.8	3727.3
15°	3855.8	3815.4	3690.8	3621.1	3584.5
17.5°	3778.8	3720.0	3565.9	3485.2	3426.5
20°	3690.8	3617.2	3433.9	3342.4	3261.4
22.5°	3595.5	3510.9	3298.1	3173.5	3118.6
25°	3500.1	3382.5	3140.4	2990.2	2934.9
27.5°	3386.4	3261.4	2993.7	2821.2	2736.7
30°	3265.4	3125.6	2832.2	2645.3	2546.0
32.5°	3147.8	2978.8	2678.3	2458.1	2366.2
35°	3015.9	2828.6	2506.0	2274.8	2193.8
37.5°	2887.4	2685.4	2344.4	2091.0	1999.6
40°	2751.6	2531.7	2175.5	1915.0	1819.7
42.5°	2612.2	2377.5	2007.0	1735.3	1643.8
45°	2465.5	2219.5	1834.5	1573.7	1485.8
47.5°	2326.1	2065.7	1669.5	1408.6	1328.1
50°	2171.9	1911.6	1508.0	1254.5	1177.9
52.5°	2021.3	1746.1	1353.8	1111.7	1042.0
55°	1874.6	1588.5	1192.2	972.3	902.7
57.5°	1724.4	1430.8	1049.4	843.9	785.1
60°	1570.2	1276.8	898.8	711.9	653.2
62.5°	1420.0	1126.5	770.3	594.4	565.2
65°	1265.8	968.4	638.4	513.8	502.5
67.5°	1119.1	821.7	513.8	451.1	440.2
70°	964.9	678.9	425.4	388.9	374.1
72.5°	818.1	546.5	355.8	326.5	319.1
75°	674.9	418.0	293.5	267.8	264.3
77.5°	532.1	297.0	231.2	216.4	209.0
80°	399.8	212.9	175.9	161.6	161.6
82.5°	278.7	143.2	121.1	113.7	113.7
85°	157.7	80.6	69.6	69.6	69.6
87.5°	58.8	29.2	29.2	25.7	25.7
90°	1.5	18.4	50.0	46.9	48.4
92.5°	31.7	42.9	44.4	45.9	45.9
95°	74.5	88.7	91.3	91.3	88.7
97.5°	123.9	137.2	142.9	142.9	142.9
100°	181.1	192.8	196.9	196.9	195.4
102.5°	241.3	249.9	255.6	257.1	255.6
105°	307.1	311.2	314.2	316.8	316.8
107.5°	372.4	378.5	378.5	379.5	372.4
110°	435.7	443.8	443.8	443.8	439.7

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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	504.0	512.6	511.1	507.0	504.0
115°	571.3	579.5	576.9	575.4	571.3
117.5°	638.2	649.4	642.2	638.2	634.1
120°	705.5	716.8	705.5	705.5	700.9
122.5°	766.7	781.0	773.8	769.8	766.7
125°	831.0	843.7	839.6	835.1	833.6
127.5°	893.8	909.5	903.9	897.9	893.8
130°	952.4	970.8	968.2	965.2	959.6
132.5°	1018.2	1032.5	1033.5	1026.4	1022.3
135°	1074.9	1090.7	1093.7	1092.2	1088.1
137.5°	1138.1	1150.8	1153.4	1152.4	1146.3
140°	1193.7	1206.5	1213.6	1213.6	1208.0
142.5°	1250.8	1263.6	1267.7	1269.2	1263.6
145°	1304.9	1315.1	1323.3	1324.8	1319.2
147.5°	1353.3	1366.1	1372.3	1374.7	1369.1
150°	1403.4	1412.0	1417.6	1422.2	1417.6
152.5°	1447.7	1456.4	1463.6	1469.2	1463.6
155°	1492.1	1496.2	1500.7	1508.0	1503.3
157.5°	1530.4	1533.5	1536.0	1546.2	1539.1
160°	1564.6	1567.6	1569.1	1577.8	1571.7
162.5°	1596.2	1596.2	1597.7	1607.4	1600.3
165°	1623.2	1621.7	1621.7	1631.9	1624.8
167.5°	1647.7	1643.2	1643.2	1653.3	1646.2
170°	1666.1	1662.0	1660.5	1670.6	1662.0
172.5°	1678.8	1674.7	1673.2	1683.4	1674.7
175°	1689.0	1685.0	1681.9	1692.1	1683.4
177.5°	1694.6	1690.6	1687.5	1696.1	1687.5
180°	1692.1	1692.1	1692.1	1692.1	1692.1

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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	12.18	13.14	13.02	13.99	15.05	8.15	9.11	8.99	9.97	11.03
	3H	13.87	14.73	14.72	15.59	16.68	9.35	10.21	10.20	11.07	12.16
	4H	14.48	15.29	15.35	16.16	17.26	9.81	10.62	10.68	11.49	12.59
	6H	14.91	15.66	15.79	16.53	17.65	10.14	10.89	11.02	11.76	12.88
	8H	15.04	15.75	15.93	16.65	17.76	10.24	10.94	11.12	11.84	12.95
	12H	15.11	15.78	16.00	16.67	17.81	10.29	10.96	11.18	11.85	12.98
4H	2H	12.22	13.02	13.09	13.89	14.99	8.77	9.57	9.64	10.44	11.54
	3H	14.06	14.73	14.94	15.63	16.75	10.13	10.80	11.01	11.70	12.82
	4H	14.76	15.37	15.65	16.26	17.41	10.68	11.29	11.58	12.19	13.33
	6H	15.28	15.80	16.19	16.73	17.87	11.11	11.64	12.02	12.56	13.71
	8H	15.46	15.95	16.37	16.86	18.02	11.24	11.74	12.16	12.65	13.81
	12H	15.56	16.00	16.49	16.94	18.10	11.32	11.76	12.25	12.69	13.86
8H	4H	14.73	15.22	15.64	16.14	17.30	10.97	11.47	11.88	12.38	13.54
	6H	15.30	15.71	16.24	16.67	17.83	11.50	11.91	12.44	12.86	14.02
	8H	15.52	15.88	16.47	16.83	18.01	11.69	12.05	12.64	13.00	14.18
	12H	15.67	15.98	16.62	16.93	18.15	11.82	12.14	12.77	13.08	14.30
12H	4H	14.69	15.13	15.62	16.07	17.23	10.99	11.43	11.91	12.36	13.52
	6H	15.28	15.64	16.23	16.59	17.76	11.55	11.91	12.50	12.86	14.03
	8H	15.51	15.82	16.46	16.77	17.99	11.77	12.08	12.72	13.03	14.25