

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: P927133

Luminaire Tested: DFN2DIP-HX4F0-110D060US830-RLLFLL

Issue Date: 12/12/2024

Test Information

Test Method: LM-79-2019
Report Number: P927133
REPORT IS A COMBINATION OF REPORTS P899350 AND P896187
Test Lab: INNOVATION CENTER
Issue Date: 12/12/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-HX4F0-110D060US830-RLLFLL
Description: 4 foot, Hexagon Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Frosted Lens
Light Source: -
Ballast/Driver: -

Summary

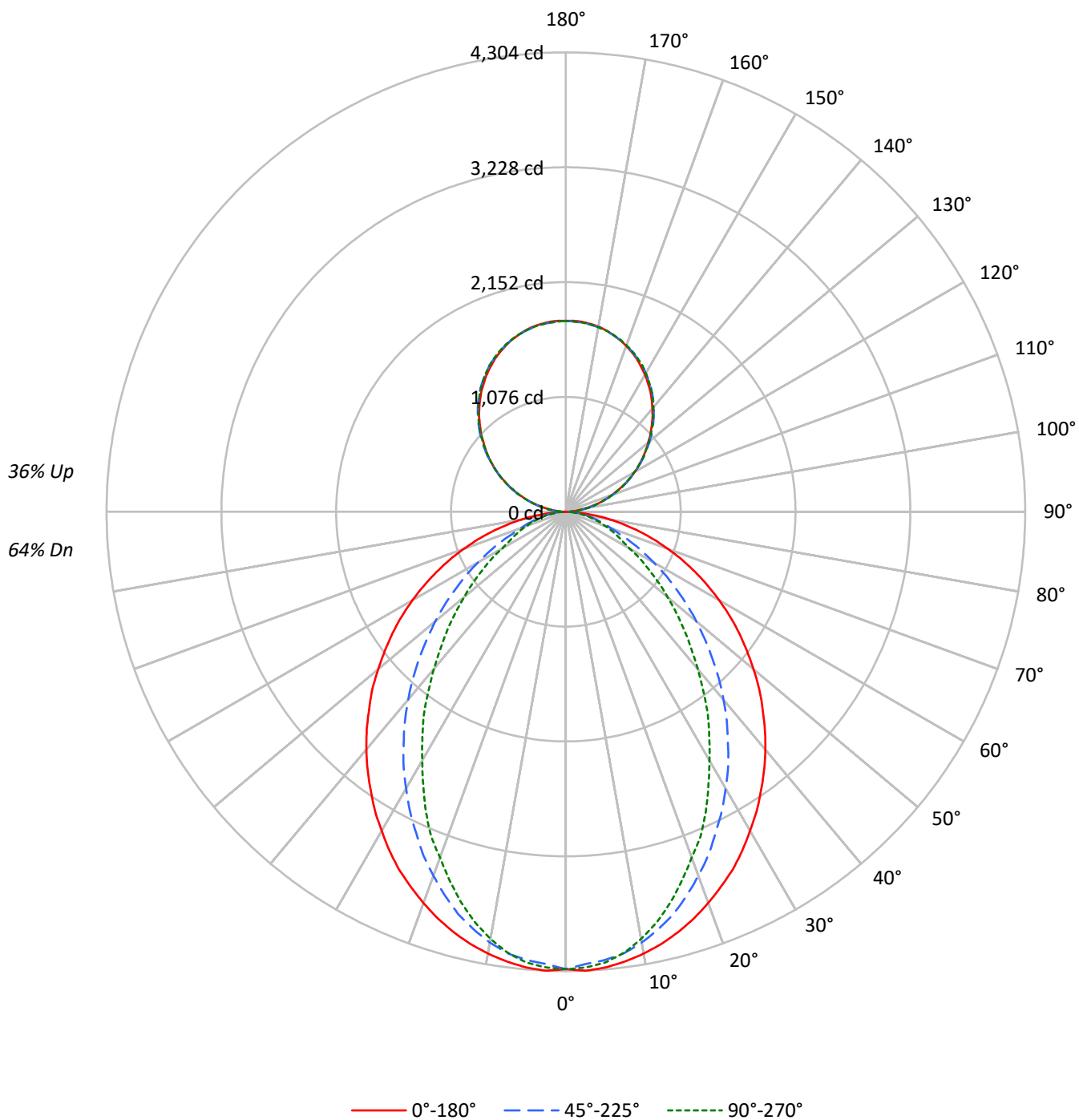
Lumens per Lamp: N/A
Luminaire Lumens: 13817.1 lumens
Efficiency: N/A
Efficacy: 88.4 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16
Luminous Opening: Rectangular w/ Sides (W: 3.54' x L: 4.09' x H: 0.1')
CIE Type: Semi-Direct

Input Watts (W): 156.3
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°	3186	3186	3186
5°	3191	3136	3156
10°	3160	3075	3053
15°	3117	2973	2895
20°	3060	2834	2700
25°	3001	2677	2512
30°	2922	2516	2273
35°	2845	2343	2064
40°	2766	2164	1824
45°	2675	1966	1606
50°	2580	1765	1393
55°	2482	1551	1189
60°	2368	1327	979
65°	2237	1099	881
70°	2078	887	798
75°	1878	782	726
80°	1589	657	630
85°	1111	440	475

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 2675 cd/sqm

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	401.6	2.9
10°-20°	1102.4	8.0
20°-30°	1547.8	11.2
30°-40°	1687.2	12.2
40°-50°	1550.7	11.2
50°-60°	1217.8	8.8
60°-70°	792.7	5.7
70°-80°	408.0	3.0
80°-90°	109.3	0.8
90°-100°	110.7	0.8
100°-110°	351.6	2.5
110°-120°	601.7	4.4
120°-130°	791.4	5.7
130°-140°	888.3	6.4
140°-150°	871.1	6.3
150°-160°	730.7	5.3
160°-170°	484.6	3.5
170°-180°	169.4	1.2
0°-30°	3051.8	22.1
0°-40°	4738.9	34.3
0°-60°	7507.5	54.3
0°-90°	8817.5	63.8
90°-120°	1064.0	7.7
90°-150°	3614.9	26.2
90°-180°	5000.0	36.2
0°-180°	13817.1	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	4285	4285	4285	4285	4285	
5°	4285	4266	4215	4250	4238	406
15°	4076	4033	3901	3827	3789	1148
25°	3699	3575	3319	3160	3102	1701
35°	3188	2990	2649	2404	2319	1995
45°	2606	2346	1939	1663	1570	2012
55°	1981	1679	1260	1028	954	1771
65°	1338	1024	675	543	531	1326
75°	713	442	310	283	279	755
85°	167	85	74	74	74	191
90°	2	19	53	50	51	14
95°	79	94	96	96	94	88
105°	325	329	332	335	335	343
115°	604	612	610	608	604	597
125°	878	892	888	883	881	785
135°	1136	1153	1156	1154	1150	878
145°	1379	1390	1399	1400	1394	862
155°	1577	1581	1586	1594	1589	726
165°	1716	1714	1714	1725	1717	484
175°	1785	1781	1778	1788	1779	170
180°	1788	1788	1788	1788	1788	

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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	4284.9	4284.9	4284.9	4284.9	4284.9
2.5°	4304.2	4284.9	4242.1	4281.2	4273.4
5°	4284.9	4265.6	4215.0	4249.9	4238.4
7.5°	4249.9	4226.8	4172.5	4187.8	4168.4
10°	4203.5	4176.2	4098.9	4087.0	4064.0
12.5°	4145.4	4110.4	4005.5	3982.4	3939.6
15°	4075.5	4032.7	3901.0	3827.4	3788.7
17.5°	3994.0	3931.9	3769.0	3683.8	3621.7
20°	3901.0	3823.3	3629.5	3532.8	3447.2
22.5°	3800.3	3710.9	3485.9	3354.3	3296.2
25°	3699.4	3575.2	3319.3	3160.5	3102.1
27.5°	3579.3	3447.2	3164.2	2981.9	2892.6
30°	3451.3	3303.7	2993.5	2795.9	2691.0
32.5°	3327.1	3148.5	2830.9	2598.1	2501.0
35°	3187.6	2989.7	2648.7	2404.3	2318.7
37.5°	3051.9	2838.3	2477.9	2210.1	2113.5
40°	2908.3	2675.9	2299.4	2024.1	1923.4
42.5°	2761.0	2512.9	2121.3	1834.1	1737.4
45°	2605.9	2345.9	1939.0	1663.3	1570.4
47.5°	2458.6	2183.4	1764.5	1488.9	1403.8
50°	2295.6	2020.4	1593.9	1326.0	1244.9
52.5°	2136.5	1845.6	1430.9	1175.0	1101.3
55°	1981.3	1679.0	1260.1	1027.7	954.1
57.5°	1822.6	1512.3	1109.1	892.0	829.8
60°	1659.6	1349.5	949.9	752.5	690.4
62.5°	1500.8	1190.7	814.2	628.3	597.4
65°	1337.9	1023.6	674.7	543.1	531.1
67.5°	1182.8	868.5	543.1	476.8	465.3
70°	1019.9	717.5	449.7	411.0	395.4
72.5°	864.7	577.7	376.1	345.1	337.3
75°	713.4	441.8	310.2	283.0	279.4
77.5°	562.4	313.9	244.4	228.7	220.9
80°	422.5	225.1	186.0	170.8	170.8
82.5°	294.5	151.4	128.0	120.2	120.2
85°	166.6	85.2	73.6	73.6	73.6
87.5°	62.1	30.8	30.8	27.1	27.1
90°	1.6	19.4	52.9	49.6	51.2
92.5°	33.5	45.3	46.9	48.5	48.5
95°	78.7	93.8	96.5	96.5	93.8
97.5°	131.0	145.1	151.0	151.0	151.0
100°	191.4	203.8	208.1	208.1	206.5
102.5°	255.0	264.2	270.1	271.7	270.1
105°	324.6	328.9	332.1	334.9	334.9
107.5°	393.6	400.1	400.1	401.1	393.6
110°	460.5	469.1	469.1	469.1	464.7

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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	532.7	541.8	540.2	535.9	532.7
115°	603.9	612.5	609.8	608.2	603.9
117.5°	674.5	686.4	678.8	674.5	670.2
120°	745.7	757.6	745.7	745.7	740.8
122.5°	810.4	825.4	817.9	813.7	810.4
125°	878.3	891.8	887.5	882.7	881.0
127.5°	944.7	961.4	955.4	949.0	944.7
130°	1006.7	1026.1	1023.4	1020.2	1014.2
132.5°	1076.2	1091.3	1092.4	1084.8	1080.5
135°	1136.1	1152.8	1156.0	1154.4	1150.0
137.5°	1202.9	1216.4	1219.1	1218.0	1211.6
140°	1261.7	1275.2	1282.7	1282.7	1276.8
142.5°	1322.0	1335.5	1339.9	1341.5	1335.5
145°	1379.3	1390.0	1398.7	1400.3	1394.3
147.5°	1430.4	1443.9	1450.4	1453.1	1447.1
150°	1483.3	1492.4	1498.4	1503.2	1498.4
152.5°	1530.1	1539.4	1546.9	1552.9	1546.9
155°	1577.1	1581.4	1586.2	1593.9	1589.0
157.5°	1617.5	1620.8	1623.5	1634.3	1626.8
160°	1653.7	1656.9	1658.5	1667.7	1661.3
162.5°	1687.1	1687.1	1688.7	1699.0	1691.4
165°	1715.6	1714.0	1714.0	1724.9	1717.3
167.5°	1741.6	1736.7	1736.7	1747.5	1739.9
170°	1761.0	1756.6	1755.0	1765.8	1756.6
172.5°	1774.4	1770.1	1768.5	1779.3	1770.1
175°	1785.2	1780.9	1777.6	1788.5	1779.3
177.5°	1791.1	1786.9	1783.6	1792.7	1783.6
180°	1788.5	1788.5	1788.5	1788.5	1788.5

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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	12.37	13.33	13.21	14.18	15.25	8.35	9.30	9.18	10.16	11.22
	3H	14.06	14.92	14.91	15.78	16.87	9.55	10.40	10.40	11.27	12.36
	4H	14.68	15.48	15.54	16.35	17.45	10.00	10.81	10.87	11.68	12.78
	6H	15.11	15.85	15.98	16.73	17.84	10.33	11.08	11.21	11.95	13.07
	8H	15.24	15.94	16.12	16.84	17.95	10.43	11.14	11.31	12.03	13.14
	12H	15.30	15.98	16.19	16.86	18.00	10.48	11.15	11.37	12.04	13.18
4H	2H	12.41	13.22	13.28	14.09	15.19	8.96	9.77	9.83	10.64	11.74
	3H	14.25	14.92	15.13	15.82	16.94	10.32	10.99	11.20	11.90	13.01
	4H	14.95	15.56	15.84	16.46	17.60	10.88	11.49	11.77	12.39	13.53
	6H	15.47	16.00	16.38	16.92	18.06	11.30	11.83	12.21	12.75	13.90
	8H	15.65	16.14	16.56	17.06	18.21	11.44	11.93	12.35	12.84	14.00
	12H	15.75	16.19	16.68	17.13	18.29	11.51	11.95	12.44	12.89	14.05
8H	4H	14.93	15.42	15.84	16.33	17.49	11.17	11.66	12.08	12.57	13.73
	6H	15.50	15.90	16.43	16.86	18.02	11.69	12.10	12.63	13.06	14.21
	8H	15.72	16.07	16.66	17.02	18.20	11.89	12.24	12.83	13.19	14.37
	12H	15.86	16.18	16.81	17.12	18.34	12.01	12.33	12.96	13.27	14.49
12H	4H	14.88	15.32	15.81	16.26	17.42	11.18	11.62	12.11	12.55	13.72
	6H	15.47	15.83	16.42	16.78	17.96	11.74	12.10	12.69	13.05	14.23
	8H	15.70	16.02	16.65	16.96	18.18	11.96	12.28	12.91	13.22	14.44