

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: P927782

Luminaire Tested: DFN2DIP-HX4F0-110D060US840-RLLONL

Issue Date: 12/12/2024

Test Information

Test Method: LM-79-2019
Report Number: P927782
REPORT IS A COMBINATION OF REPORTS P900870 AND P896187
Test Lab: INNOVATION CENTER
Issue Date: 12/12/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-HX4F0-110D060US840-RLLONL
Description: 4 foot, Hexagon Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

Summary

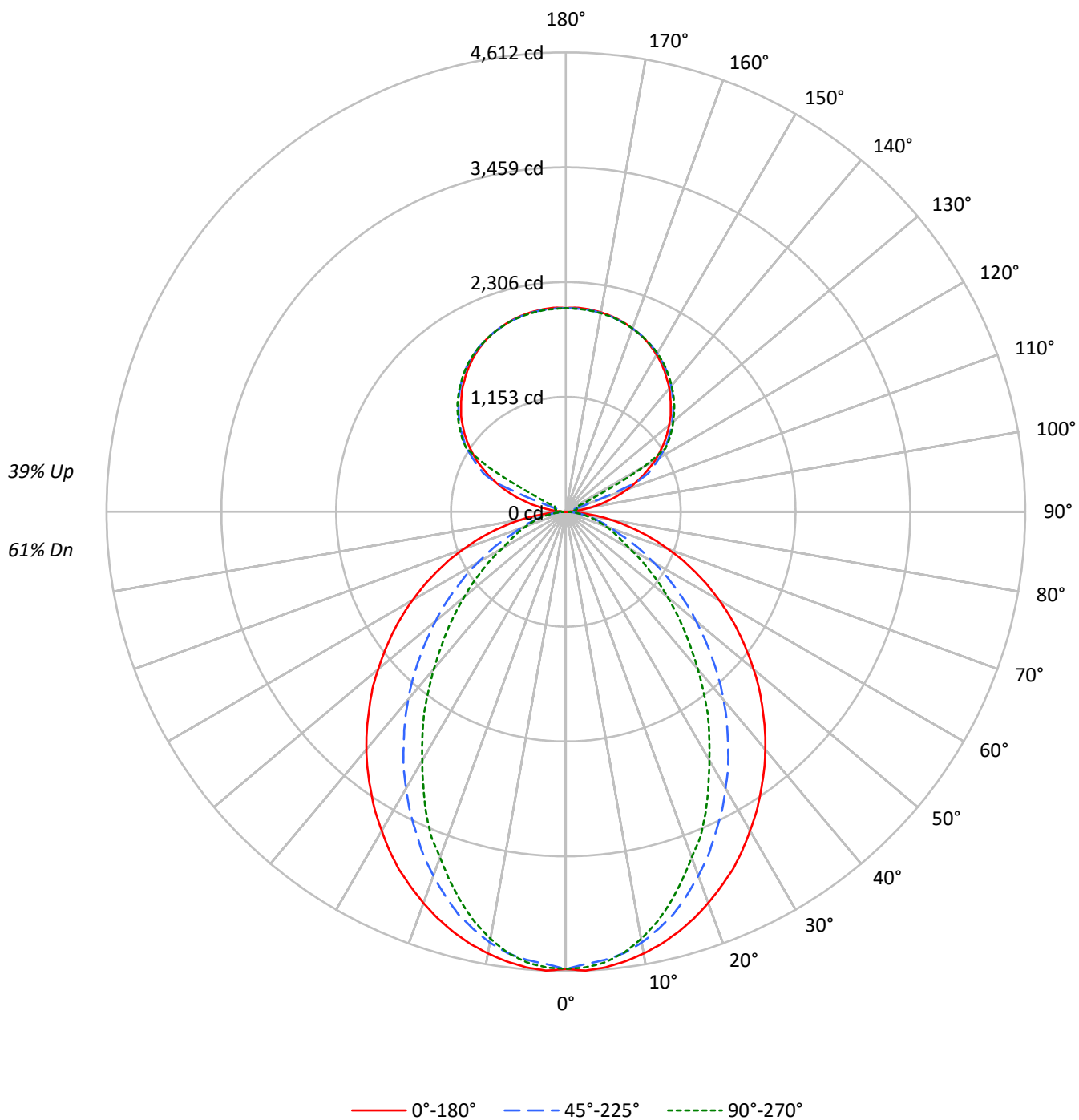
Lumens per Lamp: N/A
Luminaire Lumens: 15439.8 lumens
Efficiency: N/A
Efficacy: 98.8 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16
Luminous Opening: Rectangular w/ Sides (W: 3.54' x L: 4.09' x H: 0.1')
CIE Type: Semi-Direct

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	103	103	103	103	90	90	90	77	77	77	66	66	66
1	101	97	93	90	94	91	87	85	79	77	75	69	67	66	60	58	57
2	92	85	79	74	86	80	75	70	70	66	63	61	58	56	53	51	49
3	85	75	68	63	79	71	65	60	63	58	54	55	51	48	48	45	43
4	78	67	59	54	73	63	56	51	56	51	46	49	45	42	43	40	37
5	72	60	52	46	67	57	50	44	51	45	40	45	40	37	39	36	33
6	66	54	46	41	62	51	44	39	46	40	36	41	36	32	36	32	29
7	61	49	41	36	58	47	40	35	42	36	32	37	32	29	33	29	26
8	57	45	37	32	54	43	36	31	38	33	28	34	29	26	30	26	24
9	53	41	34	29	50	39	32	28	35	30	26	32	27	24	28	24	22
10	50	38	31	26	47	36	30	25	33	27	23	29	25	21	26	22	20

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	3414	3414	3414
5°	3419	3360	3381
10°	3386	3294	3271
15°	3339	3186	3101
20°	3278	3036	2893
25°	3215	2868	2691
30°	3131	2696	2436
35°	3048	2510	2211
40°	2964	2319	1954
45°	2866	2106	1721
50°	2765	1891	1493
55°	2659	1662	1274
60°	2537	1422	1049
65°	2396	1178	944
70°	2226	950	855
75°	2012	838	778
80°	1702	704	675
85°	1190	472	509

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 2866 cd/sqm

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	430.3	2.8
10°-20°	1181.1	7.7
20°-30°	1658.3	10.7
30°-40°	1807.6	11.7
40°-50°	1661.4	10.8
50°-60°	1304.8	8.5
60°-70°	849.3	5.5
70°-80°	437.2	2.8
80°-90°	115.2	0.7
90°-100°	67.4	0.4
100°-110°	251.3	1.6
110°-120°	666.6	4.3
120°-130°	1105.6	7.2
130°-140°	1174.4	7.6
140°-150°	1091.5	7.1
150°-160°	877.5	5.7
160°-170°	565.5	3.7
170°-180°	194.6	1.3
0°-30°	3269.7	21.2
0°-40°	5077.3	32.9
0°-60°	8043.5	52.1
0°-90°	9445.2	61.2
90°-120°	985.4	6.4
90°-150°	4357.0	28.2
90°-180°	5995.0	38.8
0°-180°	15439.8	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	4591	4591	4591	4591	4591	
5°	4591	4570	4516	4553	4541	435
15°	4366	4321	4180	4101	4059	1230
25°	3964	3830	3556	3386	3324	1823
35°	3415	3203	2838	2576	2484	2138
45°	2792	2513	2078	1782	1682	2156
55°	2123	1799	1350	1101	1022	1897
65°	1433	1097	723	582	569	1421
75°	764	473	332	303	299	808
85°	178	91	79	79	79	205
90°	1	18	30	37	40	15
95°	96	47	58	65	64	114
105°	450	494	90	106	112	481
115°	851	876	913	228	121	838
125°	1203	1222	1250	1261	1265	1073
135°	1488	1512	1525	1540	1537	1150
145°	1727	1725	1750	1761	1753	1080
155°	1901	1888	1906	1915	1903	876
165°	2003	1995	1999	2009	1999	566
175°	2049	2039	2042	2052	2037	195
180°	2045	2045	2045	2045	2045	

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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	4590.9	4590.9	4590.9	4590.9	4590.9
2.5°	4611.6	4590.9	4545.0	4586.9	4578.5
5°	4590.9	4570.2	4515.9	4553.4	4541.1
7.5°	4553.4	4528.7	4470.5	4486.8	4466.0
10°	4503.6	4474.4	4391.6	4378.8	4354.2
12.5°	4441.4	4403.9	4291.5	4266.8	4221.0
15°	4366.5	4320.6	4179.6	4100.7	4059.2
17.5°	4279.2	4212.7	4038.1	3946.8	3880.3
20°	4179.6	4096.3	3888.6	3785.0	3693.3
22.5°	4071.6	3975.9	3734.8	3593.8	3531.6
25°	3963.6	3830.5	3556.3	3386.2	3323.6
27.5°	3834.9	3693.3	3390.1	3194.8	3099.2
30°	3697.8	3539.6	3207.2	2995.6	2883.2
32.5°	3564.7	3373.3	3033.0	2783.6	2679.6
35°	3415.2	3203.2	2837.8	2576.0	2484.3
37.5°	3269.8	3041.0	2654.9	2367.9	2264.4
40°	3115.9	2866.9	2463.6	2168.6	2060.7
42.5°	2958.1	2692.3	2272.8	1965.1	1861.5
45°	2792.0	2513.4	2077.5	1782.1	1682.5
47.5°	2634.2	2339.3	1890.5	1595.2	1504.0
50°	2459.6	2164.7	1707.7	1420.7	1333.8
52.5°	2289.0	1977.4	1533.1	1258.9	1180.0
55°	2122.8	1798.9	1350.1	1101.1	1022.2
57.5°	1952.8	1620.3	1188.3	955.7	889.0
60°	1778.2	1445.8	1017.8	806.2	739.7
62.5°	1608.0	1275.7	872.4	673.1	640.0
65°	1433.4	1096.6	722.9	581.8	569.0
67.5°	1267.3	930.5	581.8	510.9	498.5
70°	1092.7	768.8	481.8	440.4	423.6
72.5°	926.5	618.9	402.9	369.8	361.4
75°	764.3	473.4	332.3	303.2	299.3
77.5°	602.5	336.4	261.8	245.1	236.7
80°	452.7	241.1	199.2	183.0	183.0
82.5°	315.6	162.2	137.1	128.7	128.7
85°	178.5	91.3	78.9	78.9	78.9
87.5°	66.5	33.0	33.0	29.1	29.1
90°	1.4	17.8	29.5	37.1	39.9
92.5°	37.1	31.1	35.4	38.5	39.9
95°	96.1	47.3	57.7	65.2	63.6
97.5°	173.1	51.8	75.3	80.0	81.4
100°	261.9	59.2	84.3	96.1	99.1
102.5°	359.5	356.7	87.3	103.5	108.0
105°	449.8	494.2	90.3	106.4	112.5
107.5°	554.9	591.7	93.3	109.5	115.4
110°	655.6	686.5	259.0	111.1	116.8

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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	750.2	776.7	751.6	113.8	118.4
115°	850.8	875.9	913.0	227.9	121.4
117.5°	938.0	967.6	992.8	781.2	393.5
120°	1035.8	1057.9	1084.6	1102.3	902.6
122.5°	1118.5	1142.2	1171.9	1180.7	1182.3
125°	1202.9	1222.2	1250.2	1260.6	1265.0
127.5°	1279.8	1300.5	1322.8	1337.6	1339.0
130°	1352.3	1376.1	1392.2	1408.6	1407.2
132.5°	1426.3	1445.6	1461.8	1475.1	1473.7
135°	1488.5	1512.3	1525.4	1540.3	1537.3
137.5°	1553.5	1571.2	1586.2	1600.9	1596.6
140°	1617.1	1629.1	1645.3	1658.6	1651.2
142.5°	1670.5	1680.9	1700.1	1711.8	1704.4
145°	1726.8	1725.1	1750.3	1760.7	1753.3
147.5°	1775.4	1771.0	1796.1	1803.5	1797.7
150°	1822.9	1812.5	1836.2	1845.0	1837.6
152.5°	1862.8	1851.0	1873.1	1882.1	1871.7
155°	1901.3	1888.0	1905.8	1914.6	1902.8
157.5°	1932.4	1920.5	1933.9	1944.3	1932.4
160°	1959.0	1950.0	1959.0	1967.8	1957.5
162.5°	1982.5	1973.8	1981.1	1991.5	1978.2
165°	2003.3	1994.6	1998.9	2009.3	1998.9
167.5°	2019.6	2010.7	2015.3	2025.7	2012.2
170°	2033.0	2024.0	2027.1	2037.4	2024.0
172.5°	2041.8	2033.0	2036.0	2046.4	2033.0
175°	2049.2	2038.8	2041.8	2052.1	2037.4
177.5°	2052.1	2041.8	2043.3	2053.7	2040.4
180°	2044.7	2044.7	2044.7	2044.7	2044.7

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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	12.40	13.33	13.26	14.21	15.31	8.37	9.30	9.23	10.18	11.28
	3H	14.08	14.92	14.96	15.80	16.94	9.57	10.40	10.44	11.29	12.42
	4H	14.70	15.48	15.59	16.38	17.52	10.03	10.81	10.92	11.70	12.85
	6H	15.12	15.85	16.03	16.75	17.90	10.35	11.08	11.26	11.98	13.13
	8H	15.25	15.94	16.16	16.86	18.01	10.45	11.13	11.36	12.05	13.21
	12H	15.32	15.97	16.24	16.89	18.07	10.49	11.15	11.41	12.06	13.24
4H	2H	12.43	13.21	13.32	14.11	15.25	8.98	9.76	9.87	10.66	11.80
	3H	14.27	14.92	15.17	15.85	17.00	10.34	10.99	11.25	11.92	13.07
	4H	14.96	15.56	15.88	16.48	17.66	10.89	11.49	11.81	12.41	13.59
	6H	15.49	16.00	16.42	16.94	18.13	11.32	11.83	12.25	12.78	13.96
	8H	15.66	16.14	16.60	17.08	18.28	11.45	11.93	12.39	12.87	14.07
	12H	15.76	16.19	16.72	17.15	18.35	11.52	11.95	12.48	12.91	14.11
8H	4H	14.94	15.42	15.87	16.36	17.55	11.18	11.66	12.12	12.60	13.80
	6H	15.51	15.91	16.47	16.89	18.08	11.71	12.10	12.67	13.08	14.28
	8H	15.73	16.08	16.70	17.05	18.26	11.90	12.25	12.87	13.22	14.43
	12H	15.87	16.18	16.84	17.14	18.41	12.02	12.33	13.00	13.29	14.56
12H	4H	14.90	15.33	15.85	16.28	17.49	11.19	11.62	12.14	12.58	13.78
	6H	15.49	15.84	16.46	16.81	18.02	11.76	12.10	12.72	13.08	14.29
	8H	15.71	16.02	16.68	16.98	18.25	11.97	12.28	12.94	13.24	14.51