

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: P927780

Luminaire Tested: DFN2DIP-HX4F0-110D060US840-FLLONL

Issue Date: 12/12/2024

Test Information

Test Method: LM-79-2019
Report Number: P927780
REPORT IS A COMBINATION OF REPORTS P900869 AND P896187
Test Lab: INNOVATION CENTER
Issue Date: 12/12/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-HX4F0-110D060US840-FLLONL
Description: 4 foot, Hexagon Define Geo, with Direct Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

Summary

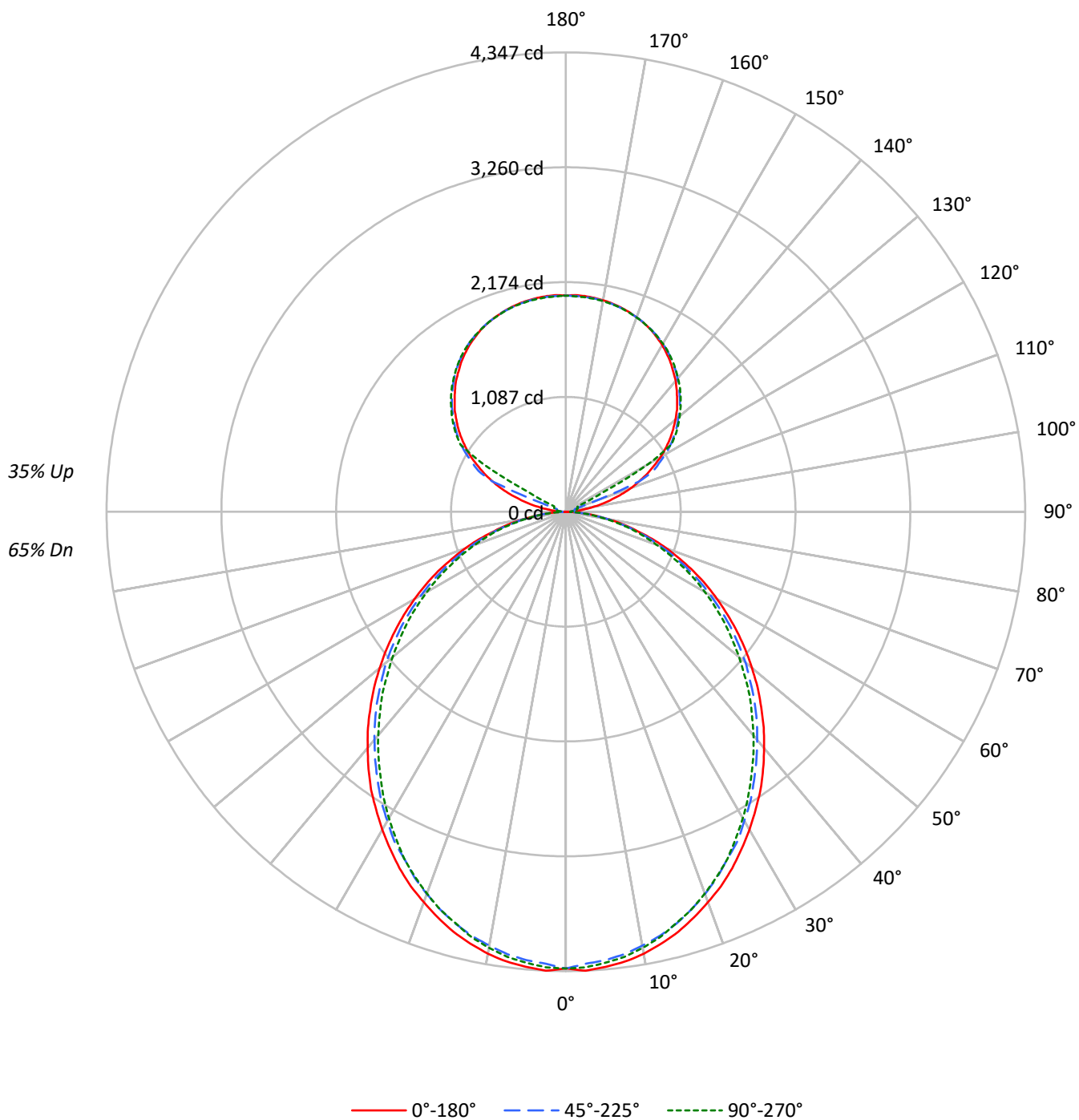
Lumens per Lamp: N/A
Luminaire Lumens: 16994.9 lumens
Efficiency: N/A
Efficacy: 108.7 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.54' x L: 4.09' x H: 0.1')
CIE Type: Semi-Direct

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
RCR																	
0	111	111	111	111	104	104	104	104	92	92	92		80	80	80		70
1	101	97	93	89	95	91	88	84	80	78	75		71	69	67		62
2	92	84	78	73	86	80	74	69	70	66	62		62	59	56		54
3	84	74	67	61	79	70	63	58	62	57	53		55	51	47		48
4	77	66	58	51	72	62	55	49	55	49	45		49	44	41		43
5	71	59	50	44	66	56	48	42	50	43	39		44	39	35		39
6	65	53	44	39	61	50	42	37	45	39	34		40	35	31		35
7	60	48	40	34	57	45	38	33	41	34	30		36	31	27		32
8	56	43	36	30	53	41	34	29	37	31	27		33	28	25		30
9	52	40	32	27	49	38	31	26	34	28	24		31	26	22		27
10	49	37	29	24	46	35	28	23	31	26	22		28	23	20		25

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	3214	3214	3214
5°	3219	3169	3191
10°	3193	3127	3147
15°	3147	3076	3080
20°	3083	3005	3011
25°	3021	2919	2931
30°	2942	2840	2830
35°	2867	2746	2723
40°	2775	2652	2621
45°	2684	2557	2516
50°	2583	2458	2395
55°	2478	2343	2284
60°	2360	2206	2157
65°	2230	2065	2006
70°	2066	1893	1845
75°	1838	1687	1696
80°	1564	1425	1411
85°	1135	971	938

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 2684 cd/sqm

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	406.8	2.4
10°-20°	1144.6	6.7
20°-30°	1682.1	9.9
30°-40°	1953.6	11.5
40°-50°	1951.2	11.5
50°-60°	1701.4	10.0
60°-70°	1257.7	7.4
70°-80°	711.6	4.2
80°-90°	191.4	1.1
90°-100°	67.4	0.4
100°-110°	251.3	1.5
110°-120°	666.6	3.9
120°-130°	1105.6	6.5
130°-140°	1174.4	6.9
140°-150°	1091.5	6.4
150°-160°	877.5	5.2
160°-170°	565.5	3.3
170°-180°	194.6	1.1
0°-30°	3233.4	19.0
0°-40°	5187.0	30.5
0°-60°	8839.6	52.0
0°-90°	11000.3	64.7
90°-120°	985.4	5.8
90°-150°	4357.0	25.6
90°-180°	5995.0	35.3
0°-180°	16994.9	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	4322	4322	4322	4322	4322	
5°	4322	4306	4260	4293	4285	410
15°	4114	4090	4036	4052	4032	1159
25°	3724	3691	3620	3628	3620	1713
35°	3213	3171	3105	3080	3059	2006
45°	2614	2585	2523	2477	2460	2018
55°	1978	1953	1904	1854	1833	1769
65°	1334	1309	1268	1230	1210	1319
75°	698	690	669	644	653	745
85°	170	166	162	150	146	190
90°	1	18	30	37	40	16
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°	4322.1	4322.1	4322.1	4322.1	4322.1
2.5°	4347.2	4326.5	4280.6	4322.1	4314.2
5°	4322.1	4305.8	4259.9	4293.0	4285.1
7.5°	4293.0	4268.3	4222.5	4256.0	4247.6
10°	4247.6	4218.4	4168.7	4201.7	4189.4
12.5°	4185.0	4160.3	4110.5	4131.2	4122.8
15°	4114.4	4089.7	4035.5	4052.2	4031.5
17.5°	4027.1	4002.4	3948.2	3968.9	3948.2
20°	3931.5	3906.7	3848.5	3860.9	3844.6
22.5°	3836.2	3798.7	3744.4	3744.4	3736.1
25°	3723.7	3690.7	3620.1	3628.1	3620.1
27.5°	3598.9	3569.8	3516.0	3503.7	3483.0
30°	3474.6	3441.1	3378.9	3366.6	3349.8
32.5°	3341.4	3316.8	3250.1	3225.0	3208.2
35°	3212.7	3171.3	3104.6	3079.5	3058.8
37.5°	3067.2	3029.7	2963.2	2934.0	2913.3
40°	2917.7	2884.2	2817.6	2780.6	2763.8
42.5°	2772.2	2738.7	2672.5	2630.6	2606.0
45°	2614.4	2585.2	2522.6	2477.2	2460.5
47.5°	2460.5	2431.4	2364.7	2318.9	2294.2
50°	2298.2	2277.5	2219.2	2161.1	2140.4
52.5°	2140.4	2111.2	2057.5	2011.5	1982.4
55°	1978.5	1953.4	1903.6	1853.7	1833.0
57.5°	1816.2	1795.5	1741.3	1691.4	1674.7
60°	1654.0	1637.7	1579.4	1533.6	1521.3
62.5°	1496.1	1467.0	1425.5	1384.1	1367.4
65°	1334.2	1309.1	1267.7	1230.2	1209.5
67.5°	1168.0	1146.9	1109.9	1080.8	1064.0
70°	1014.1	997.4	959.9	930.8	914.5
72.5°	856.3	839.5	818.8	789.8	777.3
75°	698.0	690.1	668.9	644.3	652.6
77.5°	556.9	540.1	531.8	519.4	507.1
80°	415.8	411.4	403.0	390.7	382.3
82.5°	282.6	282.6	278.7	261.9	261.9
85°	170.3	166.2	162.3	149.5	145.5
87.5°	74.9	66.5	58.2	45.8	41.4
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	12.59	13.60	13.41	14.44	15.48	12.16	13.17	12.97	14.01	15.05
	3H	14.26	15.17	15.09	16.02	17.09	13.79	14.69	14.62	15.55	16.62
	4H	14.85	15.71	15.70	16.57	17.65	14.38	15.24	15.23	16.10	17.18
	6H	15.26	16.05	16.12	16.92	18.02	14.79	15.58	15.65	16.44	17.54
	8H	15.37	16.13	16.24	17.01	18.11	14.90	15.65	15.77	16.54	17.63
	12H	15.43	16.14	16.30	17.02	18.14	14.94	15.66	15.82	16.54	17.66
4H	2H	13.07	13.93	13.92	14.78	15.87	12.72	13.58	13.58	14.44	15.52
	3H	14.95	15.66	15.81	16.56	17.65	14.55	15.27	15.42	16.16	17.26
	4H	15.67	16.32	16.55	17.21	18.34	15.26	15.92	16.14	16.80	17.93
	6H	16.19	16.76	17.09	17.67	18.80	15.78	16.35	16.68	17.26	18.39
	8H	16.35	16.87	17.24	17.78	18.92	15.94	16.46	16.83	17.37	18.51
	12H	16.43	16.90	17.34	17.83	18.98	16.01	16.48	16.92	17.41	18.55
8H	4H	15.88	16.41	16.77	17.31	18.45	15.52	16.05	16.41	16.95	18.09
	6H	16.52	16.95	17.44	17.90	19.04	16.15	16.59	17.08	17.54	18.68
	8H	16.74	17.13	17.67	18.07	19.23	16.37	16.76	17.30	17.70	18.86
	12H	16.88	17.22	17.82	18.15	19.36	16.49	16.84	17.43	17.77	18.98
12H	4H	15.87	16.35	16.79	17.27	18.42	15.52	15.99	16.43	16.92	18.07
	6H	16.55	16.94	17.48	17.88	19.03	16.20	16.58	17.13	17.53	18.68
	8H	16.80	17.14	17.73	18.07	19.28	16.44	16.78	17.38	17.72	18.92