

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: P927796

Luminaire Tested: DFN2DIP-HX4F0-110D100US840-FLLONL

Issue Date: 12/12/2024

Test Information

Test Method: LM-79-2019
Report Number: P927796
REPORT IS A COMBINATION OF REPORTS P900941 AND P896187
Test Lab: INNOVATION CENTER
Issue Date: 12/12/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-HX4F0-110D100US840-FLLONL
Description: 4 foot, Hexagon Define Geo, with Direct Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

Summary

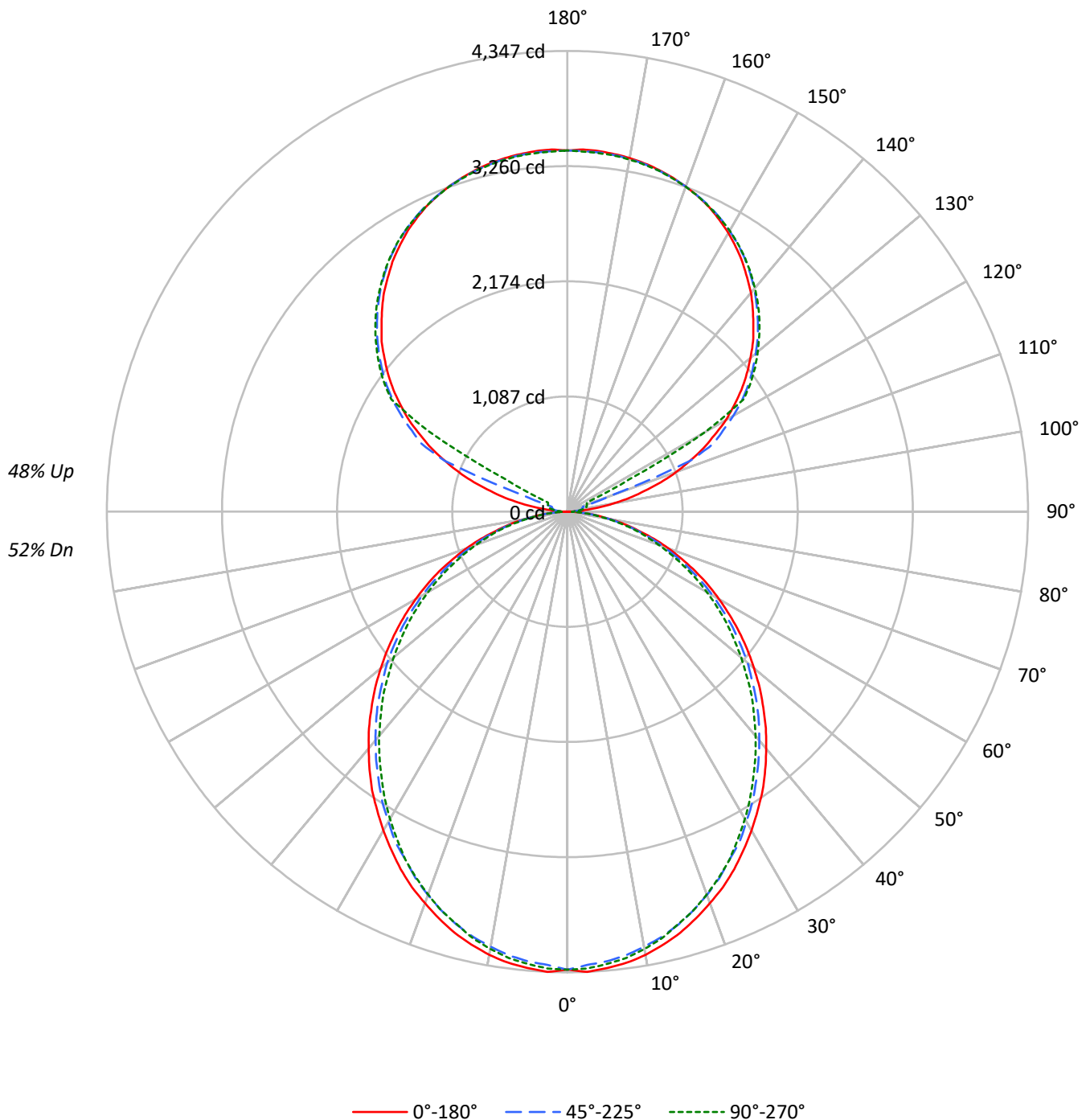
Lumens per Lamp: N/A
Luminaire Lumens: 20993.8 lumens
Efficiency: N/A
Efficacy: 111.4 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.54' x L: 4.09' x H: 0.1')
CIE Type: General Diffuse

Input Watts (W): 188.4
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	108	108	108	108	100	100	100	100	85	85	85	71	71	71	58	58	58
1	98	94	90	87	91	87	84	81	74	72	70	62	61	59	52	50	49
2	90	82	76	71	83	76	71	66	65	61	58	55	52	49	45	43	42
3	82	72	65	59	75	67	61	55	57	53	48	49	45	42	40	38	35
4	75	64	56	50	69	59	52	47	51	46	41	43	39	36	36	33	30
5	69	57	49	43	63	53	46	40	46	40	36	39	34	31	32	29	27
6	63	51	43	37	58	48	40	35	41	35	31	35	31	27	29	26	23
7	58	46	38	33	54	43	36	31	37	32	27	32	27	24	27	23	21
8	54	42	34	29	50	39	32	27	34	28	24	29	25	22	25	21	19
9	51	38	31	26	47	36	29	24	31	26	22	27	22	19	23	19	17
10	47	35	28	23	44	33	26	22	29	23	20	25	21	18	21	18	15

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	1.9
10°-20°	1144.6	5.5
20°-30°	1682.1	8.0
30°-40°	1953.6	9.3
40°-50°	1951.2	9.3
50°-60°	1701.4	8.1
60°-70°	1257.7	6.0
70°-80°	711.6	3.4
80°-90°	193.8	0.9
90°-100°	112.4	0.5
100°-110°	418.9	2.0
110°-120°	1111.0	5.3
120°-130°	1842.7	8.8
130°-140°	1957.4	9.3
140°-150°	1819.2	8.7
150°-160°	1462.6	7.0
160°-170°	942.4	4.5
170°-180°	324.4	1.5
0°-30°	3233.4	15.4
0°-40°	5187.0	24.7
0°-60°	8839.6	42.1
0°-90°	11002.7	52.4
90°-120°	1642.3	7.8
90°-150°	7261.7	34.6
90°-180°	9991.0	47.6
0°-180°	20993.8	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°	2	30	49	62	66	19
95°	160	79	96	109	106	190
105°	750	824	151	177	187	801
115°	1418	1460	1522	380	202	1396
125°	2005	2037	2084	2101	2108	1788
135°	2481	2520	2542	2567	2562	1916
145°	2878	2875	2917	2934	2922	1800
155°	3169	3147	3176	3191	3171	1460
165°	3339	3324	3332	3349	3332	943
175°	3415	3398	3403	3420	3396	325
180°	3408	3408	3408	3408	3408	

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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°	2.3	29.6	49.2	61.8	66.4
92.5°	61.8	51.8	59.2	64.1	66.4
95°	160.2	78.8	96.0	108.7	106.0
97.5°	288.4	86.3	125.6	133.2	135.6
100°	436.6	98.7	140.6	160.2	165.2
102.5°	599.1	594.5	145.5	172.5	180.0
105°	749.7	823.7	150.6	177.4	187.4
107.5°	924.8	986.3	155.5	182.5	192.4
110°	1092.5	1144.1	431.6	185.1	194.7

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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	1250.3	1294.6	1252.8	189.7	197.4
115°	1417.9	1459.8	1521.6	379.8	202.4
117.5°	1563.4	1612.7	1654.8	1301.9	656.0
120°	1726.3	1763.1	1807.6	1837.2	1504.3
122.5°	1864.2	1903.7	1953.2	1967.8	1970.4
125°	2004.8	2037.0	2083.8	2101.1	2108.4
127.5°	2133.0	2167.5	2204.7	2229.3	2231.7
130°	2253.9	2293.5	2320.4	2347.6	2345.3
132.5°	2377.2	2409.4	2436.3	2458.6	2456.2
135°	2480.9	2520.4	2542.4	2567.2	2562.3
137.5°	2589.2	2618.8	2643.7	2668.3	2660.9
140°	2695.2	2715.2	2742.0	2764.3	2752.0
142.5°	2784.2	2801.5	2833.4	2853.0	2840.8
145°	2877.9	2875.3	2917.2	2934.5	2922.2
147.5°	2959.0	2951.7	2993.6	3005.9	2996.3
150°	3038.1	3020.8	3060.4	3075.0	3062.7
152.5°	3104.5	3084.9	3121.9	3136.7	3119.5
155°	3168.8	3146.7	3176.3	3191.0	3171.4
157.5°	3220.6	3201.0	3223.2	3240.4	3220.6
160°	3265.1	3250.1	3265.1	3279.7	3262.5
162.5°	3304.3	3289.6	3301.9	3319.2	3297.0
165°	3338.8	3324.2	3331.5	3348.8	3331.5
167.5°	3366.1	3351.1	3358.8	3376.1	3353.7
170°	3388.3	3373.4	3378.4	3395.7	3373.4
172.5°	3402.9	3388.3	3393.3	3410.6	3388.3
175°	3415.2	3398.0	3402.9	3420.3	3395.7
177.5°	3420.3	3402.9	3405.7	3422.9	3400.6
180°	3408.0	3408.0	3408.0	3408.0	3408.0

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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	11.55	12.43	12.49	13.39	14.62	11.12	12.00	12.05	12.95	14.19
	3H	13.21	14.00	14.16	14.97	16.23	12.74	13.53	13.69	14.49	15.75
	4H	13.80	14.55	14.76	15.52	16.79	13.33	14.08	14.29	15.04	16.31
	6H	14.20	14.89	15.18	15.87	17.15	13.73	14.42	14.70	15.39	16.67
	8H	14.31	14.97	15.29	15.96	17.23	13.83	14.49	14.81	15.48	16.76
	12H	14.36	14.98	15.34	15.97	17.27	13.88	14.50	14.86	15.49	16.79
4H	2H	12.01	12.76	12.98	13.73	15.00	11.67	12.42	12.64	13.39	14.65
	3H	13.88	14.51	14.86	15.51	16.79	13.49	14.12	14.47	15.11	16.40
	4H	14.60	15.17	15.59	16.16	17.47	14.19	14.77	15.18	15.76	17.06
	6H	15.12	15.61	16.11	16.62	17.93	14.71	15.20	15.71	16.21	17.52
	8H	15.27	15.73	16.27	16.73	18.05	14.86	15.32	15.85	16.32	17.64
	12H	15.34	15.76	16.36	16.78	18.10	14.92	15.34	15.94	16.36	17.68
8H	4H	14.80	15.26	15.80	16.27	17.58	14.44	14.90	15.44	15.91	17.22
	6H	15.43	15.81	16.46	16.86	18.18	15.07	15.45	16.09	16.50	17.82
	8H	15.65	15.99	16.69	17.02	18.36	15.28	15.62	16.32	16.66	17.99
	12H	15.79	16.08	16.82	17.11	18.49	15.40	15.70	16.44	16.73	18.11
12H	4H	14.79	15.20	15.80	16.22	17.55	14.43	14.85	15.45	15.87	17.20
	6H	15.46	15.80	16.49	16.83	18.17	15.11	15.45	16.14	16.48	17.82
	8H	15.71	16.00	16.74	17.03	18.41	15.35	15.64	16.39	16.67	18.05