

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: P927840

Luminaire Tested: DFN2DIP-HX4F0-120D120US840-FLLONL

Issue Date: 12/12/2024

Test Information

Test Method: LM-79-2019
Report Number: P927840
REPORT IS A COMBINATION OF REPORTS P900979 AND P896187
Test Lab: INNOVATION CENTER
Issue Date: 12/12/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-HX4F0-120D120US840-FLLONL
Description: 4 foot, Hexagon Define Geo, with Direct Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

Summary

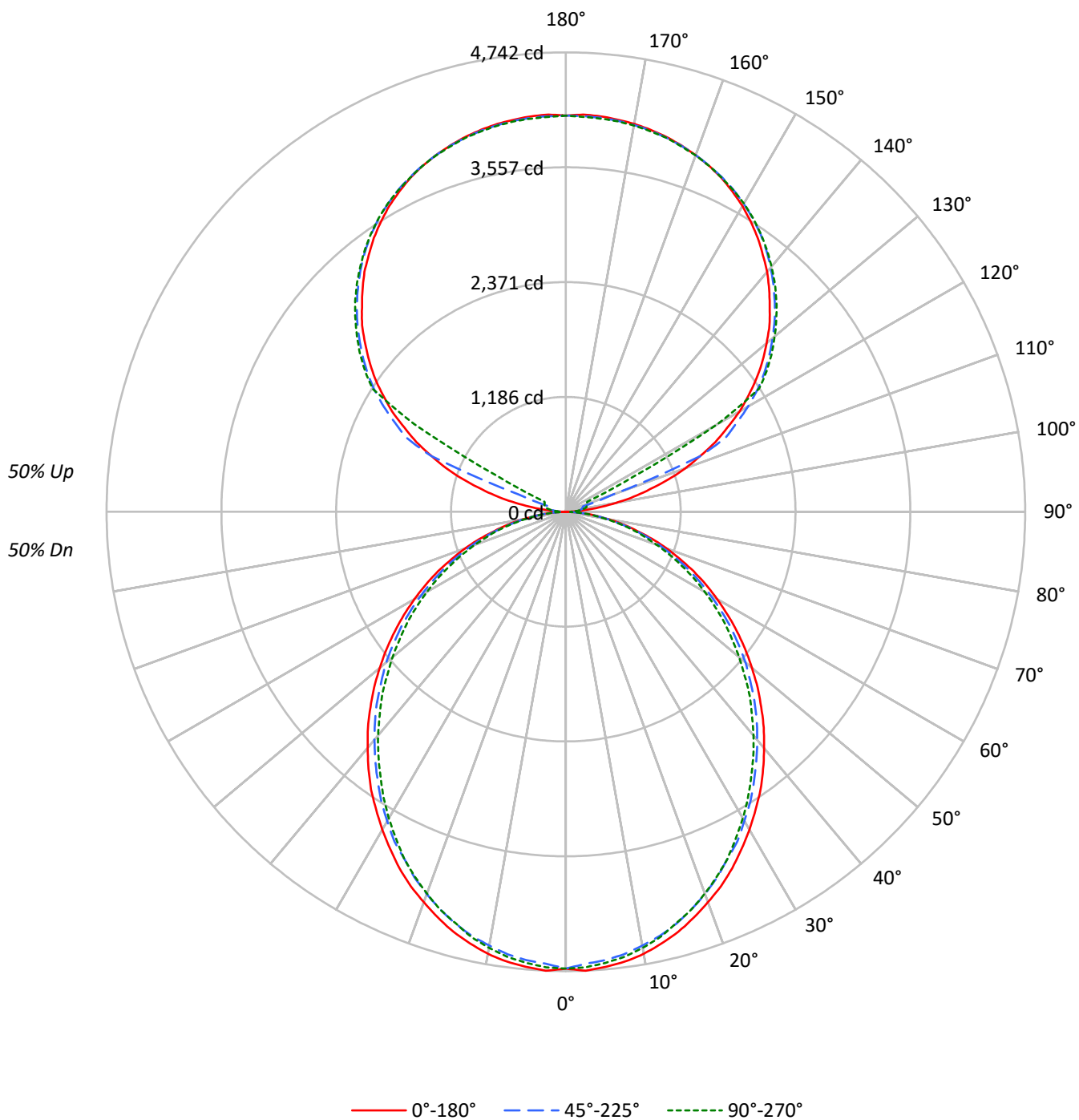
Lumens per Lamp: N/A
Luminaire Lumens: 23992.8 lumens
Efficiency: N/A
Efficacy: 108.0 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.54' x L: 4.09' x H: 0.1')
CIE Type: General Diffuse

Input Watts (W): 222.1
Input Voltage (V):
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.9954
Total Harmonic Distortion (THDi): 0.076
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	107	107	107	107	99	99	99	99	83	83	83	69	69	69	56	56	56
1	98	93	90	86	90	86	83	80	73	71	68	61	59	58	50	48	47
2	89	82	75	70	82	76	70	66	64	60	57	53	51	48	44	42	40
3	81	72	64	59	75	66	60	55	56	52	48	47	44	41	39	36	34
4	74	64	56	50	68	59	52	47	50	45	41	42	38	35	35	32	29
5	68	57	48	42	63	53	45	40	45	39	35	38	34	30	31	28	26
6	63	51	43	37	58	47	40	35	40	35	31	34	30	27	28	25	23
7	58	46	38	32	53	43	36	30	37	31	27	31	27	23	26	23	20
8	54	42	34	29	50	39	32	27	33	28	24	28	24	21	24	20	18
9	50	38	30	25	46	35	29	24	31	25	21	26	22	19	22	19	16
10	47	35	28	23	43	33	26	22	28	23	19	24	20	17	20	17	15

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	3506	3506	3506
5°	3512	3457	3481
10°	3484	3411	3434
15°	3433	3355	3360
20°	3364	3278	3285
25°	3295	3185	3198
30°	3209	3098	3087
35°	3128	2996	2970
40°	3027	2893	2859
45°	2927	2790	2745
50°	2818	2681	2613
55°	2704	2556	2492
60°	2574	2407	2353
65°	2433	2253	2189
70°	2254	2065	2013
75°	2005	1840	1850
80°	1706	1554	1539
85°	1238	1059	1024

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°
Vertical Angle: 45°
Luminance: 2927 cd/sqm

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	443.8	1.8
10°-20°	1248.6	5.2
20°-30°	1835.0	7.6
30°-40°	2131.2	8.9
40°-50°	2128.6	8.9
50°-60°	1856.0	7.7
60°-70°	1372.0	5.7
70°-80°	776.3	3.2
80°-90°	212.1	0.9
90°-100°	134.8	0.6
100°-110°	502.7	2.1
110°-120°	1333.2	5.6
120°-130°	2211.3	9.2
130°-140°	2348.9	9.8
140°-150°	2183.0	9.1
150°-160°	1755.1	7.3
160°-170°	1130.9	4.7
170°-180°	389.2	1.6
0°-30°	3527.4	14.7
0°-40°	5658.6	23.6
0°-60°	9643.2	40.2
0°-90°	12003.6	50.0
90°-120°	1970.8	8.2
90°-150°	8714.0	36.3
90°-180°	11989.0	50.0
0°-180°	23992.8	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	4715	4715	4715	4715	4715	
5°	4715	4697	4647	4683	4675	448
15°	4488	4462	4402	4421	4398	1264
25°	4062	4026	3949	3958	3949	1869
35°	3505	3460	3387	3360	3337	2189
45°	2852	2820	2752	2702	2684	2201
55°	2158	2131	2077	2022	2000	1930
65°	1456	1428	1383	1342	1320	1439
75°	762	753	730	703	712	813
85°	186	181	177	163	159	207
90°	3	35	59	74	80	22
95°	192	94	115	130	127	228
105°	900	988	181	213	225	961
115°	1701	1752	1826	456	243	1675
125°	2406	2444	2501	2521	2530	2146
135°	2977	3024	3051	3081	3075	2300
145°	3454	3450	3501	3521	3506	2160
155°	3802	3776	3812	3829	3806	1752
165°	4007	3989	3998	4019	3998	1132
175°	4098	4078	4084	4104	4075	390
180°	4090	4090	4090	4090	4090	

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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	4715.1	4715.1	4715.1	4715.1	4715.1
2.5°	4742.4	4719.8	4669.8	4715.1	4706.4
5°	4715.1	4697.2	4647.2	4683.3	4674.6
7.5°	4683.3	4656.3	4606.3	4642.9	4633.8
10°	4633.8	4602.0	4547.6	4583.7	4570.3
12.5°	4565.4	4538.4	4484.1	4506.7	4497.5
15°	4488.5	4461.5	4402.3	4420.6	4398.0
17.5°	4393.2	4366.3	4307.1	4329.7	4307.1
20°	4288.8	4261.9	4198.4	4211.9	4194.1
22.5°	4184.9	4144.0	4084.8	4084.8	4075.8
25°	4062.2	4026.2	3949.2	3957.9	3949.2
27.5°	3926.1	3894.4	3835.7	3822.2	3799.7
30°	3790.5	3753.9	3686.1	3672.6	3654.4
32.5°	3645.2	3618.3	3545.6	3518.2	3500.0
35°	3504.7	3459.6	3386.9	3359.5	3336.9
37.5°	3346.0	3305.2	3232.5	3200.8	3178.1
40°	3183.0	3146.4	3073.7	3033.3	3015.1
42.5°	3024.3	2987.7	2915.5	2869.9	2842.9
45°	2852.0	2820.3	2751.9	2702.4	2684.1
47.5°	2684.1	2652.3	2579.7	2529.8	2502.8
50°	2507.1	2484.5	2421.0	2357.5	2334.9
52.5°	2334.9	2303.2	2244.5	2194.4	2162.7
55°	2158.3	2131.0	2076.6	2022.2	1999.6
57.5°	1981.3	1958.7	1899.5	1845.2	1826.9
60°	1804.3	1786.5	1723.0	1673.0	1659.5
62.5°	1632.1	1600.3	1555.2	1510.0	1491.7
65°	1455.6	1428.2	1382.9	1342.0	1319.5
67.5°	1274.3	1251.1	1210.8	1179.0	1160.8
70°	1106.3	1088.1	1047.2	1015.5	997.7
72.5°	934.2	915.9	893.3	861.6	848.0
75°	761.5	752.8	729.7	702.8	711.9
77.5°	607.5	589.2	580.1	566.6	553.2
80°	453.6	448.8	439.7	426.2	417.0
82.5°	308.3	308.3	304.1	285.8	285.8
85°	185.7	181.4	177.0	163.1	158.7
87.5°	81.8	72.6	63.5	50.0	45.2
90°	2.8	35.4	59.1	74.1	79.8
92.5°	74.1	62.2	71.0	76.9	79.8
95°	192.2	94.5	115.2	130.4	127.2
97.5°	346.2	103.7	150.8	159.9	162.7
100°	523.9	118.4	168.6	192.2	198.2
102.5°	719.0	713.3	174.6	207.0	216.1
105°	899.5	988.5	180.7	213.0	224.9
107.5°	1109.7	1183.5	186.6	218.9	230.8
110°	1311.0	1372.9	517.9	222.1	233.7

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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	1500.5	1553.5	1503.3	227.7	236.8
115°	1701.4	1751.7	1825.8	455.7	242.9
117.5°	1876.1	1935.2	1985.8	1562.3	787.1
120°	2071.5	2115.7	2169.2	2204.7	1805.1
122.5°	2237.0	2284.5	2343.8	2361.4	2364.5
125°	2405.6	2444.3	2500.6	2521.3	2530.1
127.5°	2559.5	2601.0	2645.7	2675.2	2678.0
130°	2704.6	2752.1	2784.4	2817.1	2814.3
132.5°	2852.6	2891.3	2923.6	2950.3	2947.5
135°	2977.0	3024.5	3050.8	3080.7	3074.7
137.5°	3107.1	3142.5	3172.4	3201.9	3193.1
140°	3234.3	3258.1	3290.4	3317.2	3302.4
142.5°	3341.0	3361.8	3400.1	3423.6	3408.9
145°	3453.5	3450.4	3500.6	3521.4	3506.5
147.5°	3550.9	3542.1	3592.4	3607.1	3595.5
150°	3645.7	3625.0	3672.4	3690.0	3675.3
152.5°	3725.5	3701.9	3746.3	3764.1	3743.4
155°	3802.4	3776.0	3811.6	3829.2	3805.6
157.5°	3864.6	3841.1	3867.8	3888.5	3864.6
160°	3918.0	3900.2	3918.0	3935.6	3914.9
162.5°	3965.2	3947.6	3962.4	3983.1	3956.4
165°	4006.6	3989.0	3997.8	4018.6	3997.8
167.5°	4039.3	4021.3	4030.5	4051.2	4024.6
170°	4066.0	4048.1	4054.0	4074.7	4048.1
172.5°	4083.5	4066.0	4072.0	4092.7	4066.0
175°	4098.3	4077.6	4083.5	4104.3	4074.7
177.5°	4104.3	4083.5	4086.8	4107.5	4080.8
180°	4089.6	4089.6	4089.6	4089.6	4089.6

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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	11.63	12.50	12.59	13.47	14.74	11.20	12.06	12.16	13.04	14.31
	3H	13.30	14.07	14.26	15.05	16.34	12.82	13.60	13.79	14.58	15.87
	4H	13.88	14.61	14.87	15.60	16.90	13.41	14.14	14.39	15.13	16.43
	6H	14.28	14.96	15.28	15.95	17.26	13.81	14.48	14.80	15.47	16.79
	8H	14.39	15.03	15.39	16.04	17.35	13.91	14.56	14.91	15.56	16.87
	12H	14.44	15.05	15.44	16.05	17.39	13.96	14.57	14.96	15.57	16.90
4H	2H	12.10	12.83	13.08	13.81	15.11	11.75	12.48	12.74	13.47	14.77
	3H	13.96	14.57	14.96	15.59	16.90	13.57	14.18	14.57	15.20	16.51
	4H	14.68	15.24	15.68	16.24	17.58	14.27	14.83	15.28	15.84	17.18
	6H	15.19	15.68	16.21	16.71	18.04	14.79	15.27	15.80	16.30	17.63
	8H	15.35	15.79	16.36	16.82	18.17	14.93	15.38	15.95	16.41	17.76
	12H	15.42	15.82	16.46	16.86	18.22	15.00	15.40	16.03	16.44	17.80
8H	4H	14.88	15.33	15.89	16.35	17.70	14.52	14.96	15.53	15.99	17.34
	6H	15.51	15.88	16.55	16.95	18.29	15.15	15.52	16.19	16.58	17.93
	8H	15.73	16.06	16.78	17.11	18.48	15.36	15.69	16.41	16.74	18.11
	12H	15.86	16.15	16.92	17.20	18.61	15.48	15.77	16.53	16.81	18.22
12H	4H	14.86	15.27	15.90	16.31	17.66	14.51	14.92	15.55	15.95	17.31
	6H	15.54	15.87	16.59	16.92	18.28	15.19	15.51	16.24	16.57	17.93
	8H	15.78	16.07	16.84	17.12	18.53	15.42	15.71	16.48	16.76	18.17