

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: P927188

Luminaire Tested: DFN2DIP-HX4F0-120D110US830-FLLONL

Issue Date: 12/12/2024

Test Information

Test Method: LM-79-2019
Report Number: P927188
REPORT IS A COMBINATION OF REPORTS P900961 AND P896187
Test Lab: INNOVATION CENTER
Issue Date: 12/12/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-HX4F0-120D110US830-FLLONL
Description: 4 foot, Hexagon Define Geo, with Direct Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

Summary

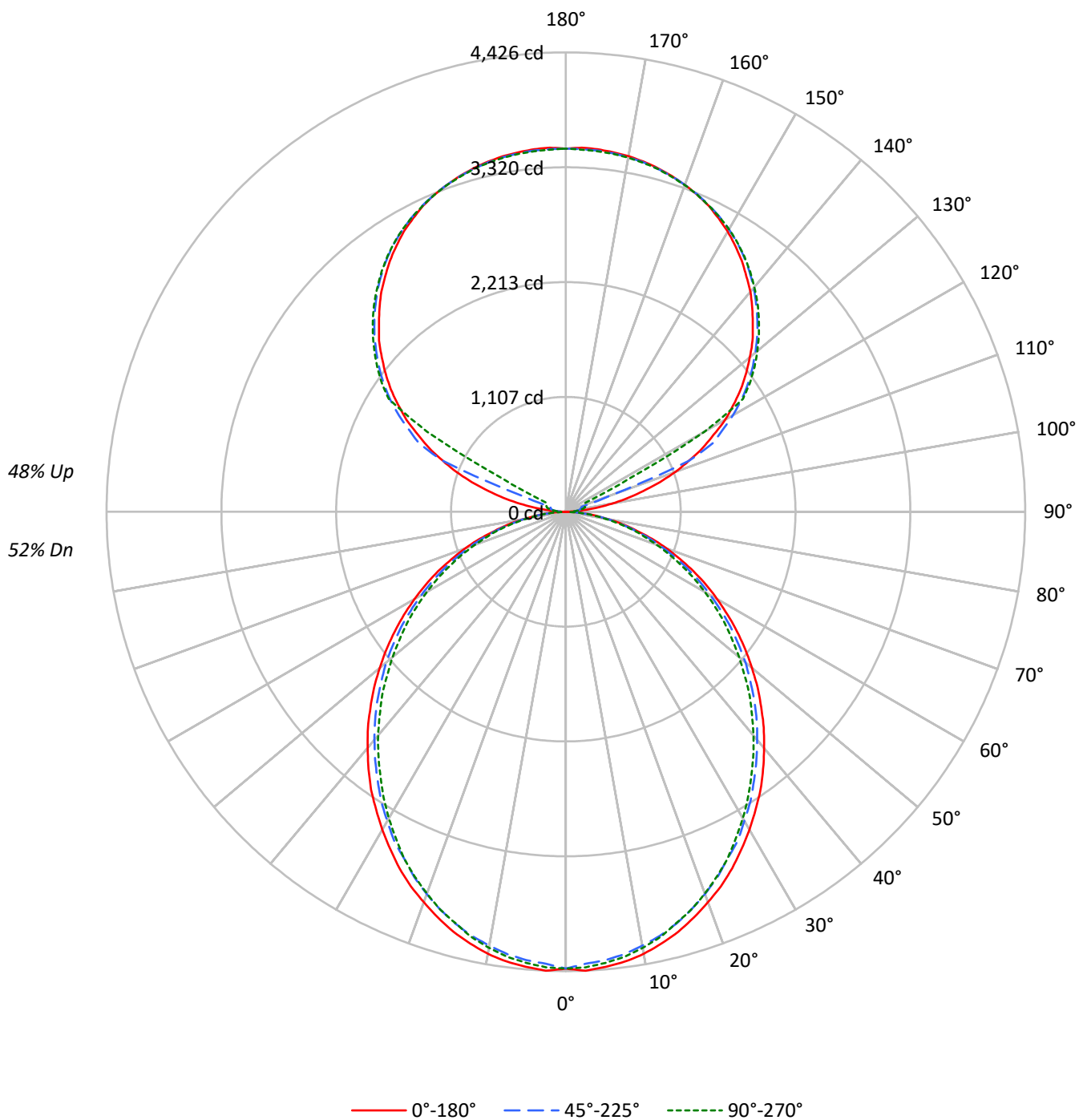
Lumens per Lamp: N/A
Luminaire Lumens: 21460.7 lumens
Efficiency: N/A
Efficacy: 100.6 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.54' x L: 4.09' x H: 0.1')
CIE Type: General Diffuse

Input Watts (W): 213.4
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	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	69	62	61	59	51	50	49
2	89	82	76	71	83	76	71	66	65	61	58	55	52	49	45	43	41
3	82	72	65	59	75	67	61	55	57	52	48	48	45	42	40	37	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	26
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	21	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	17	21	18	15

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	3272	3272	3272
5°	3278	3227	3249
10°	3251	3184	3205
15°	3204	3132	3136
20°	3140	3059	3066
25°	3076	2972	2985
30°	2995	2892	2882
35°	2919	2796	2772
40°	2826	2700	2668
45°	2732	2604	2562
50°	2630	2503	2439
55°	2523	2386	2326
60°	2403	2247	2196
65°	2271	2103	2043
70°	2104	1928	1879
75°	1871	1718	1727
80°	1592	1451	1437
85°	1155	988	956

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 2732 cd/sqm

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	414.2	1.9
10°-20°	1165.4	5.4
20°-30°	1712.7	8.0
30°-40°	1989.2	9.3
40°-50°	1986.7	9.3
50°-60°	1732.3	8.1
60°-70°	1280.6	6.0
70°-80°	724.5	3.4
80°-90°	197.4	0.9
90°-100°	115.4	0.5
100°-110°	430.1	2.0
110°-120°	1140.7	5.3
120°-130°	1891.9	8.8
130°-140°	2009.6	9.4
140°-150°	1867.7	8.7
150°-160°	1501.6	7.0
160°-170°	967.6	4.5
170°-180°	333.0	1.6
0°-30°	3292.3	15.3
0°-40°	5281.5	24.6
0°-60°	9000.5	41.9
0°-90°	11203.0	52.2
90°-120°	1686.2	7.9
90°-150°	7455.4	34.7
90°-180°	10258.0	47.8
0°-180°	21460.7	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	4401	4401	4401	4401	4401	
5°	4401	4384	4338	4371	4363	418
15°	4189	4164	4109	4126	4105	1180
25°	3792	3758	3686	3694	3686	1745
35°	3271	3229	3161	3136	3114	2043
45°	2662	2632	2568	2522	2505	2054
55°	2014	1989	1938	1888	1866	1801
65°	1359	1333	1291	1253	1232	1343
75°	711	703	681	656	664	759
85°	173	169	165	152	148	193
90°	2	30	50	63	68	20
95°	164	81	99	112	109	195
105°	770	846	155	182	192	822
115°	1456	1499	1562	390	208	1433
125°	2058	2091	2139	2157	2165	1836
135°	2547	2588	2610	2636	2631	1968
145°	2955	2952	2995	3013	3000	1848
155°	3253	3231	3261	3276	3256	1499
165°	3428	3413	3420	3438	3420	968
175°	3506	3489	3494	3512	3486	334
180°	3499	3499	3499	3499	3499	

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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	4400.8	4400.8	4400.8	4400.8	4400.8
2.5°	4426.4	4405.2	4358.6	4400.8	4392.7
5°	4400.8	4384.1	4337.5	4371.1	4363.0
7.5°	4371.1	4346.0	4299.3	4333.4	4324.9
10°	4324.9	4295.3	4244.5	4278.2	4265.7
12.5°	4261.1	4236.0	4185.3	4206.4	4197.8
15°	4189.3	4164.2	4108.9	4126.0	4104.9
17.5°	4100.4	4075.3	4020.0	4041.2	4020.0
20°	4003.0	3977.8	3918.6	3931.2	3914.6
22.5°	3906.0	3867.8	3812.6	3812.6	3804.1
25°	3791.5	3757.8	3686.0	3694.1	3686.0
27.5°	3664.4	3634.8	3580.1	3567.5	3546.4
30°	3537.9	3503.7	3440.4	3427.9	3410.8
32.5°	3402.2	3377.2	3309.3	3283.8	3266.7
35°	3271.1	3229.0	3161.1	3135.6	3114.5
37.5°	3123.0	3084.9	3017.0	2987.4	2966.3
40°	2970.9	2936.7	2868.9	2831.2	2814.1
42.5°	2822.7	2788.6	2721.2	2678.6	2653.4
45°	2661.9	2632.3	2568.5	2522.3	2505.3
47.5°	2505.3	2475.6	2407.8	2361.2	2336.0
50°	2340.0	2318.9	2259.6	2200.4	2179.2
52.5°	2179.2	2149.7	2094.9	2048.1	2018.6
55°	2014.5	1989.0	1938.2	1887.5	1866.3
57.5°	1849.3	1828.2	1772.9	1722.2	1705.2
60°	1684.1	1667.5	1608.2	1561.5	1548.9
62.5°	1523.4	1493.7	1451.5	1409.3	1392.3
65°	1358.6	1333.0	1290.8	1252.6	1231.6
67.5°	1189.3	1167.8	1130.1	1100.5	1083.4
70°	1032.6	1015.5	977.4	947.8	931.2
72.5°	871.9	854.8	833.7	804.1	791.5
75°	710.7	702.6	681.1	656.0	664.5
77.5°	567.0	549.9	541.5	528.8	516.3
80°	423.4	418.8	410.4	397.8	389.3
82.5°	287.7	287.7	283.8	266.7	266.7
85°	173.3	169.3	165.2	152.2	148.2
87.5°	76.3	67.8	59.3	46.7	42.2
90°	2.5	30.3	50.5	63.4	68.2
92.5°	63.4	53.3	60.7	65.9	68.2
95°	164.5	80.9	98.6	111.5	108.9
97.5°	296.1	88.7	128.9	136.8	139.2
100°	448.3	101.3	144.3	164.5	169.6
102.5°	615.1	610.3	149.4	177.1	184.9
105°	769.6	845.7	154.6	182.2	192.5
107.5°	949.5	1012.5	159.7	187.3	197.5
110°	1121.7	1174.6	443.2	190.0	199.9

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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	1283.8	1329.1	1286.1	194.8	202.6
115°	1455.7	1498.7	1562.2	389.9	207.7
117.5°	1605.2	1655.7	1699.0	1336.7	673.4
120°	1772.3	1810.2	1855.9	1886.2	1544.4
122.5°	1913.9	1954.5	2005.3	2020.3	2023.1
125°	2058.2	2091.3	2139.4	2157.1	2164.6
127.5°	2189.9	2225.3	2263.5	2288.8	2291.2
130°	2314.0	2354.6	2382.3	2410.3	2407.9
132.5°	2440.6	2473.7	2501.4	2524.2	2521.8
135°	2547.1	2587.6	2610.2	2635.8	2630.6
137.5°	2658.3	2688.7	2714.2	2739.5	2731.9
140°	2767.2	2787.5	2815.2	2838.1	2825.4
142.5°	2858.5	2876.2	2909.0	2929.2	2916.6
145°	2954.7	2952.0	2995.0	3012.8	3000.2
147.5°	3038.1	3030.5	3073.5	3086.1	3076.2
150°	3119.2	3101.5	3142.0	3157.1	3144.5
152.5°	3187.4	3167.3	3205.2	3220.5	3202.8
155°	3253.3	3230.7	3261.0	3276.1	3256.0
157.5°	3306.5	3286.3	3309.2	3326.9	3306.5
160°	3352.2	3336.8	3352.2	3367.2	3349.5
162.5°	3392.4	3377.4	3390.1	3407.8	3385.0
165°	3428.0	3412.9	3420.4	3438.1	3420.4
167.5°	3455.9	3440.6	3448.4	3466.1	3443.3
170°	3478.8	3463.4	3468.5	3486.3	3463.4
172.5°	3493.8	3478.8	3483.9	3501.6	3478.8
175°	3506.4	3488.7	3493.8	3511.6	3486.3
177.5°	3511.6	3493.8	3496.5	3514.2	3491.4
180°	3498.9	3498.9	3498.9	3498.9	3498.9

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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	11.59	12.47	12.53	13.43	14.67	11.16	12.04	12.10	13.00	14.24
	3H	13.26	14.05	14.21	15.01	16.27	12.78	13.57	13.73	14.54	15.80
	4H	13.85	14.59	14.81	15.56	16.83	13.37	14.12	14.34	15.09	16.36
	6H	14.25	14.94	15.22	15.91	17.19	13.77	14.46	14.75	15.43	16.72
	8H	14.35	15.01	15.33	16.00	17.28	13.88	14.53	14.86	15.52	16.81
	12H	14.40	15.03	15.39	16.01	17.32	13.92	14.55	14.91	15.53	16.84
4H	2H	12.06	12.81	13.03	13.77	15.05	11.71	12.46	12.68	13.43	14.70
	3H	13.93	14.55	14.91	15.55	16.83	13.53	14.16	14.51	15.16	16.44
	4H	14.64	15.21	15.63	16.21	17.51	14.24	14.81	15.23	15.80	17.11
	6H	15.16	15.65	16.16	16.67	17.97	14.75	15.24	15.75	16.26	17.56
	8H	15.31	15.77	16.31	16.78	18.10	14.90	15.36	15.90	16.37	17.69
	12H	15.39	15.80	16.41	16.82	18.15	14.96	15.38	15.98	16.40	17.73
8H	4H	14.84	15.30	15.84	16.31	17.63	14.48	14.94	15.48	15.95	17.27
	6H	15.48	15.86	16.50	16.91	18.22	15.11	15.49	16.14	16.54	17.86
	8H	15.70	16.03	16.73	17.07	18.41	15.33	15.66	16.36	16.70	18.04
	12H	15.83	16.12	16.87	17.16	18.54	15.45	15.74	16.48	16.77	18.15
12H	4H	14.83	15.24	15.85	16.27	17.59	14.48	14.89	15.50	15.92	17.24
	6H	15.51	15.84	16.54	16.88	18.22	15.15	15.49	16.19	16.53	17.86
	8H	15.75	16.04	16.79	17.08	18.46	15.39	15.69	16.43	16.72	18.10