

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: P927080

Luminaire Tested: DFN2DIP-HX4F0-090D110US830-FLLONL

Issue Date: 12/12/2024

Test Information

Test Method: LM-79-2019
Report Number: P927080
REPORT IS A COMBINATION OF REPORTS P900955 AND P896187
Test Lab: INNOVATION CENTER
Issue Date: 12/12/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-HX4F0-090D110US830-FLLONL
Description: 4 foot, Hexagon Define Geo, with Direct Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

Summary

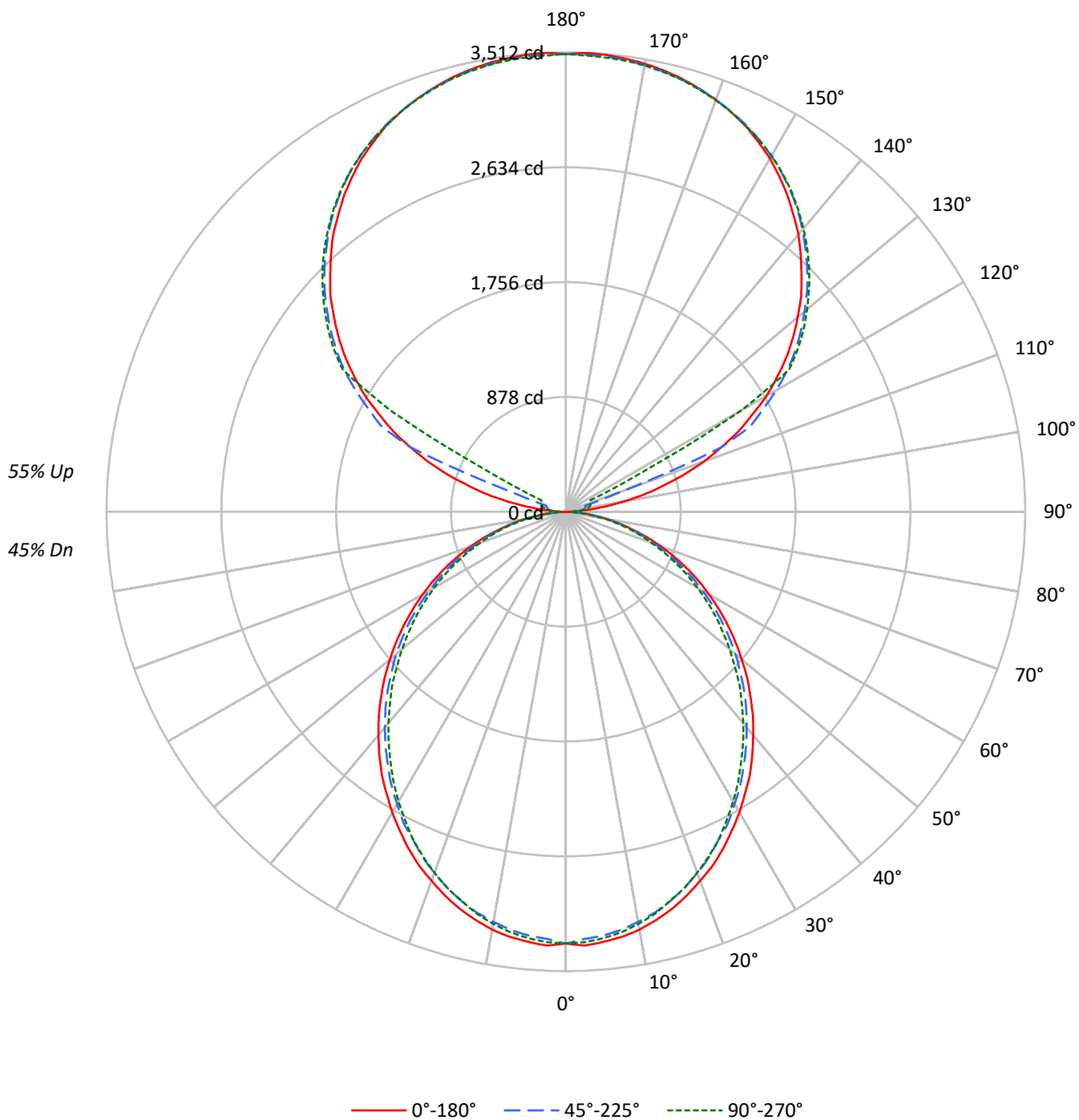
Lumens per Lamp: N/A
Luminaire Lumens: 18661.5 lumens
Efficiency: N/A
Efficacy: 106.1 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.54' x L: 4.09' x H: 0.1')
CIE Type: General Diffuse

Input Watts (W): 175.9
Input Voltage (V):
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.9821
Total Harmonic Distortion (THDi): 0.08
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	50	30	10
RCR																				
0	106	106	106	106	97	97	97	97	81	81	81	65	65	65	52	52	52			45
1	97	92	89	85	88	85	82	79	71	68	66	58	56	54	46	45	44			38
2	88	81	75	69	80	74	69	64	62	58	55	51	48	45	40	38	37			32
3	80	71	64	58	73	65	59	54	55	50	46	45	41	38	36	33	31			27
4	73	63	55	49	67	58	51	46	48	43	39	40	36	33	32	29	27			23
5	67	56	48	42	61	52	44	39	43	38	34	36	32	29	29	26	23			20
6	62	50	42	36	57	46	39	34	39	34	29	32	28	25	26	23	21			18
7	57	45	37	32	52	42	35	30	35	30	26	29	25	22	24	21	18			16
8	53	41	33	28	49	38	31	26	32	27	23	27	23	20	22	19	16			14
9	50	37	30	25	45	35	28	23	30	24	21	25	21	18	20	17	15			13
10	46	34	27	22	42	32	25	21	27	22	18	23	19	16	19	16	13			11

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	2454	2454	2454
5°	2458	2420	2436
10°	2439	2388	2404
15°	2403	2349	2352
20°	2355	2294	2299
25°	2307	2229	2239
30°	2246	2169	2161
35°	2190	2097	2079
40°	2119	2025	2001
45°	2049	1953	1922
50°	1973	1877	1829
55°	1893	1789	1744
60°	1802	1685	1647
65°	1703	1577	1532
70°	1578	1446	1409
75°	1403	1288	1295
80°	1194	1088	1078
85°	867	741	717

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 2049 cd/sqm

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	310.7	1.7
10°-20°	874.1	4.7
20°-30°	1284.5	6.9
30°-40°	1491.9	8.0
40°-50°	1490.0	8.0
50°-60°	1299.3	7.0
60°-70°	960.4	5.1
70°-80°	543.4	2.9
80°-90°	149.6	0.8
90°-100°	115.4	0.6
100°-110°	430.1	2.3
110°-120°	1140.7	6.1
120°-130°	1891.9	10.1
130°-140°	2009.6	10.8
140°-150°	1867.7	10.0
150°-160°	1501.6	8.0
160°-170°	967.6	5.2
170°-180°	333.0	1.8
0°-30°	2469.2	13.2
0°-40°	3961.1	21.2
0°-60°	6750.4	36.2
0°-90°	8403.8	45.0
90°-120°	1686.2	9.0
90°-150°	7455.4	40.0
90°-180°	10258.0	55.0
0°-180°	18661.5	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	3300	3300	3300	3300	3300	
5°	3300	3288	3253	3278	3272	313
15°	3142	3123	3082	3094	3079	885
25°	2844	2818	2764	2771	2764	1308
35°	2453	2422	2371	2352	2336	1532
45°	1996	1974	1926	1892	1879	1541
55°	1511	1492	1454	1416	1400	1351
65°	1019	1000	968	940	924	1007
75°	533	527	511	492	498	569
85°	130	127	124	114	111	145
90°	2	30	50	63	68	17
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°	3300.5	3300.5	3300.5	3300.5	3300.5
2.5°	3319.8	3303.9	3269.0	3300.5	3294.5
5°	3300.5	3288.1	3253.1	3278.4	3272.3
7.5°	3278.4	3259.5	3224.5	3250.1	3243.7
10°	3243.7	3221.5	3183.4	3208.6	3199.2
12.5°	3195.8	3177.0	3139.0	3154.7	3148.4
15°	3142.0	3123.2	3081.7	3094.5	3078.7
17.5°	3075.3	3056.4	3015.1	3030.9	3015.1
20°	3002.2	2983.4	2938.9	2948.3	2935.9
22.5°	2929.5	2900.9	2859.5	2859.5	2853.0
25°	2843.6	2818.4	2764.5	2770.6	2764.5
27.5°	2748.3	2726.1	2685.1	2675.7	2659.8
30°	2653.4	2627.8	2580.3	2570.9	2558.1
32.5°	2551.7	2532.9	2482.0	2462.8	2450.0
35°	2453.4	2421.8	2370.9	2351.7	2335.9
37.5°	2342.3	2313.6	2262.8	2240.6	2224.8
40°	2228.1	2202.5	2151.6	2123.4	2110.6
42.5°	2116.9	2091.4	2040.9	2008.9	1990.1
45°	1996.4	1974.3	1926.4	1891.7	1879.0
47.5°	1879.0	1856.7	1805.8	1770.9	1752.0
50°	1755.0	1739.2	1694.7	1650.3	1634.5
52.5°	1634.5	1612.2	1571.1	1536.2	1513.9
55°	1510.9	1491.7	1453.6	1415.6	1399.8
57.5°	1387.0	1371.1	1329.8	1291.7	1278.9
60°	1263.0	1250.6	1206.1	1171.2	1161.7
62.5°	1142.5	1120.3	1088.6	1057.0	1044.2
65°	1018.9	999.7	968.0	939.5	923.6
67.5°	892.0	875.9	847.5	825.3	812.5
70°	774.5	761.6	733.1	710.8	698.4
72.5°	653.9	641.1	625.3	603.1	593.7
75°	533.1	527.0	510.8	492.0	498.4
77.5°	425.3	412.5	406.1	396.7	387.3
80°	317.5	314.1	307.7	298.3	292.0
82.5°	215.8	215.8	212.8	200.0	200.0
85°	130.0	127.0	123.9	114.1	111.1
87.5°	57.2	50.8	44.5	35.1	31.7
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	9.91	10.73	10.91	11.74	13.08	9.48	10.30	10.48	11.31	12.65
	3H	11.57	12.31	12.58	13.33	14.69	11.10	11.83	12.11	12.85	14.21
	4H	12.16	12.85	13.18	13.88	15.24	11.69	12.38	12.71	13.40	14.77
	6H	12.56	13.20	13.59	14.22	15.60	12.08	12.72	13.11	13.75	15.13
	8H	12.66	13.27	13.70	14.31	15.69	12.19	12.80	13.22	13.84	15.22
	12H	12.71	13.29	13.75	14.32	15.73	12.23	12.81	13.27	13.84	15.24
4H	2H	10.37	11.07	11.40	12.09	13.46	10.03	10.72	11.06	11.74	13.11
	3H	12.23	12.81	13.27	13.86	15.25	11.84	12.42	12.88	13.47	14.85
	4H	12.95	13.48	13.99	14.52	15.93	12.54	13.07	13.59	14.12	15.52
	6H	13.46	13.92	14.52	14.98	16.38	13.05	13.51	14.11	14.57	15.97
	8H	13.61	14.04	14.67	15.10	16.51	13.20	13.63	14.25	14.68	16.10
	12H	13.68	14.07	14.76	15.14	16.56	13.26	13.65	14.33	14.72	16.14
8H	4H	13.14	13.57	14.20	14.63	16.04	12.78	13.21	13.84	14.27	15.68
	6H	13.77	14.13	14.85	15.23	16.64	13.41	13.76	14.49	14.86	16.28
	8H	13.99	14.30	15.08	15.39	16.82	13.62	13.93	14.71	15.02	16.45
	12H	14.12	14.40	15.21	15.48	16.95	13.74	14.01	14.83	15.09	16.56
12H	4H	13.13	13.51	14.20	14.58	16.00	12.77	13.16	13.85	14.23	15.65
	6H	13.80	14.11	14.89	15.20	16.63	13.45	13.76	14.54	14.84	16.28
	8H	14.04	14.32	15.13	15.39	16.87	13.69	13.96	14.78	15.04	16.51