

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: P921924

Luminaire Tested: DFN2DIP-HX4F0-110D120US940-FLLFLL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P921924
REPORT IS A COMBINATION OF REPORTS P899457 AND P896188
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-HX4F0-110D120US940-FLLFLL
Description: 4 foot, Hexagon Define Geo, with Direct Frosted Lens, Indirect Frosted Lens
Light Source: -
Ballast/Driver: -

Summary

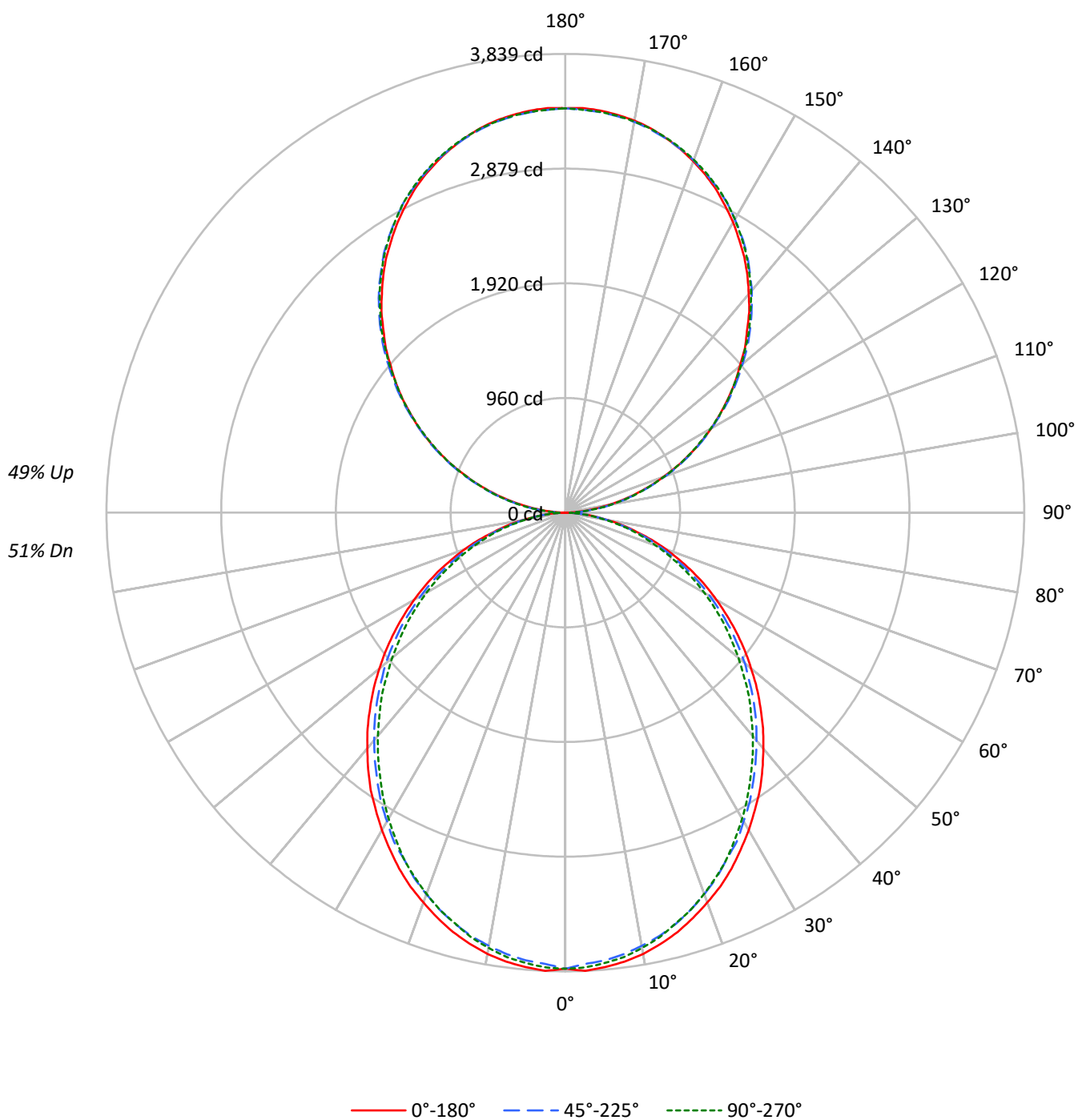
Lumens per Lamp: N/A
Luminaire Lumens: 19180.7 lumens
Efficiency: N/A
Efficacy: 103.4 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.54' x L: 4.09' x H: 0.1')
CIE Type: General Diffuse

Input Watts (W): 185.5
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	50	30	10
RCR																				
0	107	107	107	107	99	99	99	99	84	84	84	70	70	70	57	57	57	57	57	57
1	98	94	90	86	90	87	83	80	73	71	69	61	60	58	50	49	48	48	48	43
2	89	82	76	70	82	76	70	66	64	60	57	54	51	48	44	42	40	40	40	36
3	81	72	65	59	75	67	60	55	57	52	48	48	44	41	39	37	34	34	34	30
4	74	64	56	50	68	59	52	47	50	45	41	42	38	35	35	32	30	30	30	26
5	68	57	49	43	63	53	45	40	45	40	35	38	34	30	32	28	26	26	26	23
6	63	51	43	37	58	47	40	35	41	35	31	34	30	27	29	25	23	23	23	20
7	58	46	38	32	54	43	36	31	37	31	27	31	27	24	26	23	20	20	20	18
8	54	42	34	29	50	39	32	27	34	28	24	29	24	21	24	21	18	18	18	16
9	50	38	31	25	46	36	29	24	31	25	22	26	22	19	22	19	16	16	16	14
10	47	35	28	23	43	33	26	22	28	23	19	24	20	17	21	17	15	15	15	13

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	2838	2838	2838
5°	2843	2799	2817
10°	2820	2761	2779
15°	2779	2716	2720
20°	2723	2653	2659
25°	2667	2578	2589
30°	2598	2508	2499
35°	2532	2425	2404
40°	2451	2342	2314
45°	2370	2258	2222
50°	2281	2171	2115
55°	2188	2069	2017
60°	2084	1948	1905
65°	1970	1824	1772
70°	1824	1672	1629
75°	1623	1490	1498
80°	1381	1258	1246
85°	1002	857	829

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 90°

Vertical Angle: 90°

Luminance: 2551 cd/sqm

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	359.2	1.9
10°-20°	1010.7	5.3
20°-30°	1485.4	7.7
30°-40°	1725.2	9.0
40°-50°	1723.0	9.0
50°-60°	1502.4	7.8
60°-70°	1110.6	5.8
70°-80°	628.4	3.3
80°-90°	175.5	0.9
90°-100°	209.4	1.1
100°-110°	665.4	3.5
110°-120°	1138.7	5.9
120°-130°	1497.5	7.8
130°-140°	1680.9	8.8
140°-150°	1648.3	8.6
150°-160°	1382.7	7.2
160°-170°	917.0	4.8
170°-180°	320.5	1.7
0°-30°	2855.3	14.9
0°-40°	4580.5	23.9
0°-60°	7805.9	40.7
0°-90°	9720.4	50.7
90°-120°	2013.4	10.5
90°-150°	6840.1	35.7
90°-180°	9460.0	49.3
0°-180°	19180.7	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	3817	3817	3817	3817	3817	
5°	3817	3802	3762	3791	3784	362
15°	3633	3611	3564	3578	3560	1023
25°	3288	3259	3197	3204	3197	1513
35°	2837	2800	2742	2719	2701	1772
45°	2309	2283	2228	2188	2173	1782
55°	1747	1725	1681	1637	1619	1562
65°	1178	1156	1120	1086	1068	1165
75°	616	609	591	569	576	658
85°	150	147	143	132	128	168
90°	3	37	100	94	97	19
95°	149	178	183	183	178	166
105°	614	622	628	634	634	648
115°	1143	1159	1154	1151	1143	1130
125°	1662	1688	1679	1670	1667	1485
135°	2150	2181	2188	2184	2176	1662
145°	2610	2630	2646	2650	2638	1631
155°	2984	2992	3002	3016	3007	1374
165°	3246	3243	3243	3264	3250	916
175°	3378	3370	3364	3384	3367	321
180°	3384	3384	3384	3384	3384	

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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	3816.7	3816.7	3816.7	3816.7	3816.7
2.5°	3838.8	3820.5	3780.0	3816.7	3809.7
5°	3816.7	3802.3	3761.8	3790.9	3784.0
7.5°	3790.9	3769.2	3728.7	3758.3	3750.9
10°	3750.9	3725.1	3681.2	3710.3	3699.4
12.5°	3695.6	3673.8	3629.8	3648.1	3640.7
15°	3633.3	3611.4	3563.5	3578.3	3560.1
17.5°	3556.1	3534.4	3486.5	3504.8	3486.5
20°	3471.7	3449.8	3398.5	3409.4	3395.0
22.5°	3387.6	3354.4	3306.6	3306.6	3299.1
25°	3288.3	3259.1	3196.8	3203.8	3196.8
27.5°	3178.1	3152.4	3104.8	3094.0	3075.7
30°	3068.3	3038.7	2983.8	2972.9	2958.1
32.5°	2950.7	2928.9	2870.1	2847.9	2833.1
35°	2837.0	2800.4	2741.6	2719.4	2701.1
37.5°	2708.5	2675.4	2616.6	2590.9	2572.6
40°	2576.5	2546.9	2488.1	2455.4	2440.6
42.5°	2448.0	2418.4	2360.0	2323.0	2301.2
45°	2308.6	2282.9	2227.6	2187.5	2172.7
47.5°	2172.7	2147.1	2088.2	2047.7	2025.9
50°	2029.4	2011.2	1959.7	1908.3	1890.1
52.5°	1890.1	1864.3	1816.9	1776.3	1750.6
55°	1747.1	1724.9	1681.0	1636.9	1618.6
57.5°	1603.8	1585.6	1537.7	1493.6	1478.8
60°	1460.5	1446.2	1394.7	1354.2	1343.4
62.5°	1321.2	1295.5	1258.8	1222.3	1207.5
65°	1178.2	1156.0	1119.5	1086.4	1068.1
67.5°	1031.4	1012.8	980.1	954.4	939.6
70°	895.5	880.7	847.7	822.0	807.5
72.5°	756.2	741.4	723.1	697.4	686.4
75°	616.4	609.4	590.7	568.9	576.3
77.5°	491.8	477.0	469.6	458.7	447.8
80°	367.2	363.3	355.9	345.0	337.6
82.5°	249.6	249.6	246.1	231.3	231.3
85°	150.3	146.8	143.3	132.0	128.5
87.5°	66.2	58.8	51.4	40.5	36.6
90°	3.0	36.7	100.0	93.9	96.9
92.5°	63.2	85.7	88.7	91.8	91.8
95°	148.9	177.5	182.6	182.6	177.5
97.5°	247.9	274.5	285.7	285.7	285.7
100°	362.2	385.7	393.8	393.8	390.7
102.5°	482.6	499.9	511.1	514.2	511.1
105°	614.2	622.3	628.5	633.6	633.6
107.5°	744.8	757.1	757.1	759.0	744.8
110°	871.3	887.6	887.6	887.6	879.5

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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	1008.0	1025.4	1022.3	1014.1	1008.0
115°	1142.6	1159.0	1153.9	1150.8	1142.6
117.5°	1276.3	1298.8	1284.5	1276.3	1268.2
120°	1411.0	1433.4	1411.0	1411.0	1401.9
122.5°	1533.5	1562.0	1547.7	1539.5	1533.5
125°	1662.0	1687.5	1679.4	1670.2	1667.1
127.5°	1787.5	1819.1	1807.9	1795.6	1787.5
130°	1904.8	1941.5	1936.4	1930.3	1919.0
132.5°	2036.4	2065.0	2067.0	2052.7	2044.6
135°	2149.6	2181.3	2187.5	2184.3	2176.2
137.5°	2276.2	2301.7	2306.8	2304.7	2292.5
140°	2387.4	2412.9	2427.1	2427.1	2415.9
142.5°	2501.7	2527.2	2535.3	2538.3	2527.2
145°	2609.8	2630.2	2646.5	2649.6	2638.4
147.5°	2706.7	2732.2	2744.5	2749.6	2738.4
150°	2806.7	2824.0	2835.3	2844.5	2835.3
152.5°	2895.5	2912.8	2927.1	2938.4	2927.1
155°	2984.2	2992.4	3001.6	3015.9	3006.7
157.5°	3060.8	3066.9	3071.9	3092.4	3078.1
160°	3129.1	3135.3	3138.3	3155.7	3143.4
162.5°	3192.3	3192.3	3195.4	3214.8	3200.5
165°	3246.4	3243.4	3243.4	3263.7	3249.5
167.5°	3295.4	3286.2	3286.2	3306.6	3292.4
170°	3332.1	3323.9	3320.9	3341.3	3323.9
172.5°	3357.6	3349.4	3346.4	3366.8	3349.4
175°	3378.1	3369.9	3363.8	3384.1	3366.8
177.5°	3389.3	3381.1	3374.9	3392.3	3374.9
180°	3384.1	3384.1	3384.1	3384.1	3384.1

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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	10.96	11.83	11.91	12.79	14.05	10.53	11.39	11.48	12.36	13.62
	3H	12.62	13.40	13.58	14.37	15.66	12.15	12.92	13.11	13.90	15.19
	4H	13.21	13.94	14.18	14.93	16.22	12.73	13.47	13.71	14.45	15.74
	6H	13.61	14.29	14.60	15.27	16.58	13.13	13.81	14.12	14.80	16.10
	8H	13.71	14.36	14.71	15.36	16.67	13.24	13.89	14.23	14.89	16.19
	12H	13.76	14.38	14.76	15.37	16.70	13.28	13.90	14.28	14.89	16.22
4H	2H	11.42	12.16	12.40	13.14	14.43	11.08	11.81	12.06	12.79	14.09
	3H	13.29	13.90	14.28	14.91	16.22	12.90	13.51	13.89	14.52	15.83
	4H	14.00	14.57	15.00	15.57	16.90	13.60	14.16	14.60	15.16	16.49
	6H	14.52	15.00	15.53	16.03	17.36	14.11	14.60	15.12	15.62	16.95
	8H	14.67	15.12	15.68	16.14	17.48	14.26	14.71	15.27	15.73	17.07
	12H	14.74	15.15	15.78	16.19	17.54	14.32	14.73	15.35	15.77	17.11
8H	4H	14.20	14.65	15.21	15.67	17.02	13.84	14.29	14.85	15.31	16.66
	6H	14.83	15.21	15.87	16.27	17.61	14.47	14.85	15.51	15.91	17.25
	8H	15.06	15.39	16.10	16.43	17.79	14.69	15.02	15.73	16.06	17.42
	12H	15.19	15.48	16.24	16.52	17.92	14.80	15.09	15.85	16.14	17.54
12H	4H	14.19	14.60	15.22	15.63	16.98	13.84	14.24	14.87	15.28	16.63
	6H	14.87	15.20	15.91	16.24	17.60	14.51	14.84	15.56	15.89	17.25
	8H	15.11	15.40	16.16	16.44	17.84	14.75	15.04	15.80	16.08	17.48

END OF REPORT