

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: P929378

Luminaire Tested: DFN2DIP-HX4F0-100D090US940-RLLONL

Issue Date: 12/12/2024

Test Information

Test Method: LM-79-2019
Report Number: P929378
REPORT IS A COMBINATION OF REPORTS P900922 AND P896187
Test Lab: INNOVATION CENTER
Issue Date: 12/12/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-HX4F0-100D090US940-RLLONL
Description: 4 foot, Hexagon Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

Summary

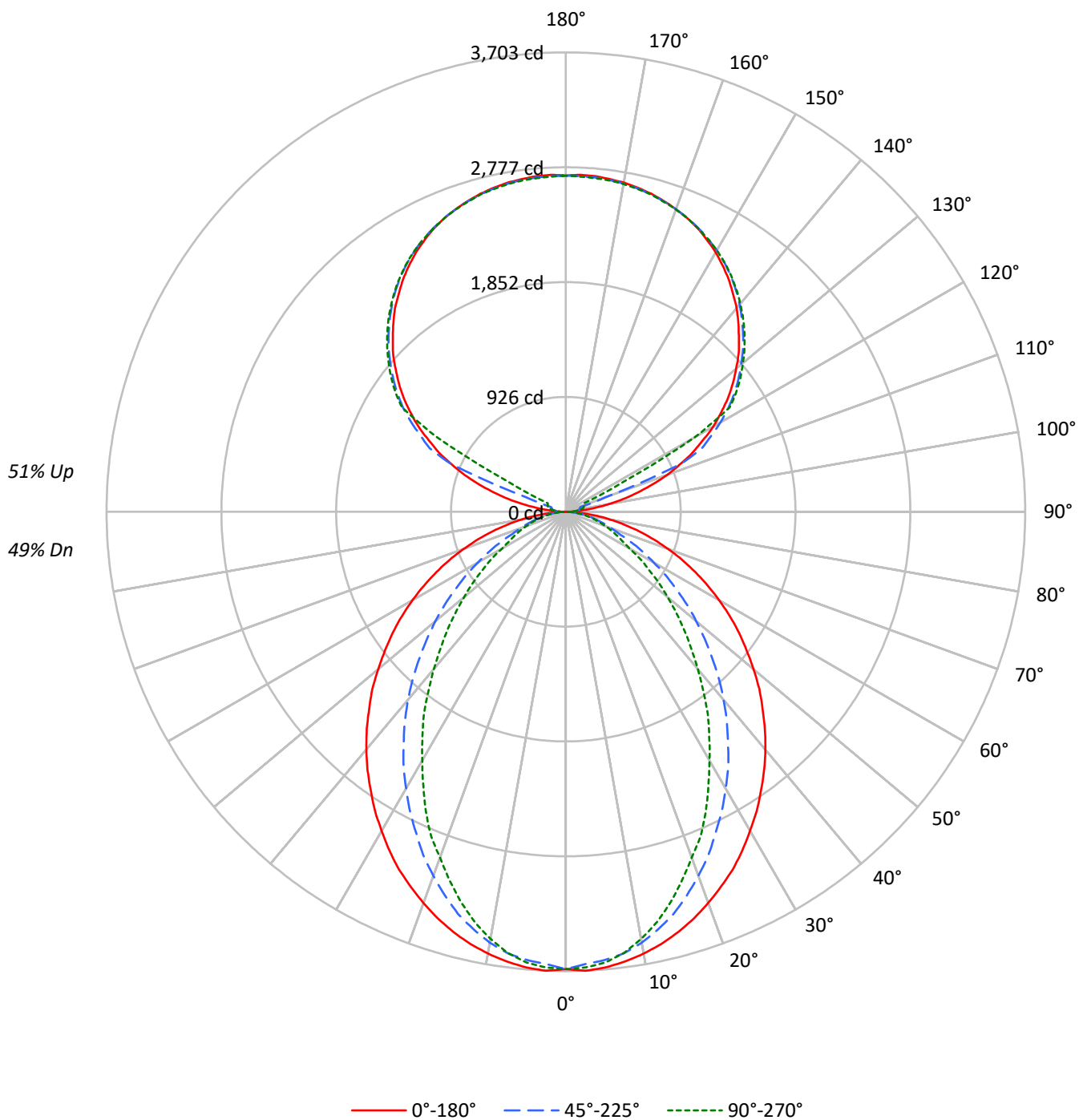
Lumens per Lamp: N/A
Luminaire Lumens: 15529.7 lumens
Efficiency: N/A
Efficacy: 92.8 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16
Luminous Opening: Rectangular w/ Sides (W: 3.54' x L: 4.09' x H: 0.1')
CIE Type: General Diffuse

Input Watts (W): 167.3
Input Voltage (V):
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.946
Total Harmonic Distortion (THDi): 0.132
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	98	98	98	98	83	83	83	68	68	68	55	55	55
1	98	94	90	87	90	87	83	81	73	71	69	61	59	58	49	48	47
2	90	83	77	72	82	76	71	67	65	61	58	54	51	49	44	42	41
3	82	73	66	60	75	68	61	56	57	53	49	48	45	42	39	37	35
4	75	65	57	51	69	60	53	48	51	46	42	43	39	36	36	33	31
5	69	58	50	44	64	54	47	42	46	41	37	39	35	32	32	29	27
6	64	52	44	39	59	49	42	37	42	36	32	35	31	28	29	26	24
7	59	47	40	34	55	44	37	32	38	33	29	32	28	25	27	24	22
8	55	43	35	30	51	40	33	29	35	29	26	30	26	22	25	22	19
9	51	39	32	27	47	37	30	26	32	27	23	27	23	20	23	20	18
10	48	36	29	24	44	34	28	23	30	24	21	25	21	18	21	18	16

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	2741	2741	2741
5°	2746	2698	2715
10°	2719	2645	2627
15°	2682	2558	2490
20°	2632	2438	2323
25°	2582	2303	2161
30°	2514	2165	1956
35°	2448	2016	1776
40°	2380	1862	1569
45°	2301	1691	1382
50°	2220	1519	1199
55°	2135	1334	1023
60°	2037	1142	842
65°	1924	946	758
70°	1788	763	686
75°	1616	673	625
80°	1367	566	542
85°	955	379	408

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 2301 cd/sqm

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	345.5	2.2
10°-20°	948.5	6.1
20°-30°	1331.7	8.6
30°-40°	1451.6	9.3
40°-50°	1334.2	8.6
50°-60°	1047.8	6.7
60°-70°	682.0	4.4
70°-80°	351.1	2.3
80°-90°	94.4	0.6
90°-100°	89.3	0.6
100°-110°	333.0	2.1
110°-120°	883.3	5.7
120°-130°	1465.0	9.4
130°-140°	1556.2	10.0
140°-150°	1446.3	9.3
150°-160°	1162.8	7.5
160°-170°	749.2	4.8
170°-180°	257.9	1.7
0°-30°	2625.7	16.9
0°-40°	4077.3	26.3
0°-60°	6459.3	41.6
0°-90°	7586.7	48.9
90°-120°	1305.7	8.4
90°-150°	5773.1	37.2
90°-180°	7943.0	51.1
0°-180°	15529.7	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	3687	3687	3687	3687	3687	
5°	3687	3670	3626	3657	3647	350
15°	3506	3470	3356	3293	3260	988
25°	3183	3076	2856	2719	2669	1464
35°	2742	2572	2279	2069	1995	1717
45°	2242	2018	1668	1431	1351	1731
55°	1705	1445	1084	884	821	1523
65°	1151	881	580	467	457	1141
75°	614	380	267	244	240	649
85°	143	73	63	63	63	165
90°	2	24	39	49	53	15
95°	127	63	76	86	84	151
105°	596	655	120	141	149	637
115°	1127	1160	1210	302	161	1110
125°	1594	1619	1657	1670	1676	1421
135°	1972	2004	2021	2041	2037	1524
145°	2288	2286	2319	2333	2323	1431
155°	2519	2502	2525	2537	2521	1161
165°	2654	2643	2649	2662	2649	750
175°	2715	2701	2705	2719	2700	258
180°	2709	2709	2709	2709	2709	

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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	3686.6	3686.6	3686.6	3686.6	3686.6
2.5°	3703.2	3686.6	3649.8	3683.4	3676.7
5°	3686.6	3670.0	3626.4	3656.6	3646.6
7.5°	3656.6	3636.7	3589.9	3603.1	3586.5
10°	3616.5	3593.2	3526.6	3516.4	3496.6
12.5°	3566.7	3536.5	3446.2	3426.4	3389.6
15°	3506.5	3469.6	3356.3	3293.0	3259.7
17.5°	3436.3	3382.9	3242.8	3169.5	3116.0
20°	3356.3	3289.4	3122.7	3039.6	2965.9
22.5°	3269.6	3192.8	2999.2	2886.0	2836.0
25°	3182.9	3076.1	2855.8	2719.2	2669.0
27.5°	3079.5	2965.9	2722.4	2565.6	2488.8
30°	2969.5	2842.4	2575.5	2405.6	2315.4
32.5°	2862.6	2708.9	2435.7	2235.4	2151.8
35°	2742.5	2572.3	2278.9	2068.6	1995.0
37.5°	2625.8	2442.0	2132.0	1901.6	1818.3
40°	2502.2	2302.3	1978.4	1741.5	1654.8
42.5°	2375.5	2162.0	1825.1	1578.0	1494.8
45°	2242.0	2018.3	1668.3	1431.1	1351.1
47.5°	2115.4	1878.6	1518.2	1281.0	1207.8
50°	1975.2	1738.3	1371.3	1140.9	1071.1
52.5°	1838.1	1587.9	1231.1	1010.9	947.6
55°	1704.7	1444.6	1084.2	884.2	820.8
57.5°	1568.1	1301.2	954.4	767.4	714.0
60°	1427.9	1161.0	817.3	647.4	594.0
62.5°	1291.3	1024.4	700.5	540.6	514.0
65°	1151.1	880.7	580.5	467.2	457.0
67.5°	1017.7	747.2	467.2	410.2	400.3
70°	877.5	617.4	386.9	353.6	340.2
72.5°	744.0	496.9	323.5	296.9	290.3
75°	613.8	380.2	266.9	243.5	240.3
77.5°	483.9	270.1	210.2	196.8	190.1
80°	363.5	193.7	160.0	146.9	146.9
82.5°	253.4	130.2	110.1	103.4	103.4
85°	143.3	73.2	63.3	63.3	63.3
87.5°	53.4	26.6	26.6	23.4	23.4
90°	1.9	23.5	39.1	49.1	52.8
92.5°	49.1	41.2	47.0	51.0	52.8
95°	127.4	62.6	76.4	86.3	84.3
97.5°	229.3	68.7	99.9	105.9	107.8
100°	347.1	78.5	111.8	127.4	131.3
102.5°	476.3	472.6	115.7	137.1	143.2
105°	595.9	654.9	119.6	141.1	149.0
107.5°	735.2	784.1	123.6	145.0	153.0
110°	868.5	909.6	343.2	147.1	154.9

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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	994.0	1029.2	995.9	150.8	156.9
115°	1127.2	1160.5	1209.6	301.9	160.8
117.5°	1242.9	1282.1	1315.5	1035.1	521.5
120°	1372.3	1401.7	1437.1	1460.6	1195.9
122.5°	1482.1	1513.5	1552.8	1564.4	1566.5
125°	1593.7	1619.3	1656.6	1670.4	1676.2
127.5°	1695.7	1723.2	1752.8	1772.3	1774.2
130°	1791.8	1823.3	1844.7	1866.3	1864.5
132.5°	1889.9	1915.5	1936.9	1954.6	1952.8
135°	1972.3	2003.7	2021.2	2041.0	2037.1
137.5°	2058.5	2081.9	2101.7	2121.3	2115.5
140°	2142.7	2158.6	2180.0	2197.6	2187.9
142.5°	2213.5	2227.2	2252.6	2268.2	2258.5
145°	2288.0	2285.8	2319.2	2332.9	2323.1
147.5°	2352.5	2346.7	2379.9	2389.8	2382.0
150°	2415.4	2401.6	2433.0	2444.6	2434.9
152.5°	2468.2	2452.6	2481.9	2493.8	2480.0
155°	2519.2	2501.7	2525.2	2536.8	2521.2
157.5°	2560.4	2544.8	2562.4	2576.2	2560.4
160°	2595.7	2583.9	2595.7	2607.4	2593.7
162.5°	2626.9	2615.3	2625.1	2638.8	2621.1
165°	2654.4	2642.7	2648.6	2662.4	2648.6
167.5°	2676.1	2664.2	2670.2	2683.9	2666.3
170°	2693.8	2681.9	2685.8	2699.5	2681.9
172.5°	2705.4	2693.8	2697.7	2711.4	2693.8
175°	2715.2	2701.4	2705.4	2719.1	2699.5
177.5°	2719.1	2705.4	2707.5	2721.2	2703.6
180°	2709.4	2709.4	2709.4	2709.4	2709.4

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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	10.54	11.36	11.52	12.35	13.64	6.52	7.34	7.49	8.32	9.61
	3H	12.22	12.95	13.21	13.95	15.26	7.71	8.44	8.69	9.43	10.74
	4H	12.83	13.52	13.83	14.52	15.84	8.16	8.85	9.16	9.85	11.17
	6H	13.25	13.89	14.26	14.89	16.22	8.48	9.12	9.49	10.12	11.45
	8H	13.38	13.99	14.39	15.00	16.33	8.57	9.18	9.58	10.19	11.52
	12H	13.44	14.02	14.46	15.03	16.38	8.61	9.19	9.63	10.20	11.56
4H	2H	10.56	11.25	11.56	12.25	13.57	7.11	7.81	8.12	8.80	10.12
	3H	12.39	12.97	13.40	13.99	15.33	8.46	9.04	9.47	10.06	11.40
	4H	13.08	13.61	14.10	14.63	15.98	9.01	9.54	10.03	10.56	11.91
	6H	13.60	14.05	14.63	15.09	16.45	9.43	9.88	10.46	10.93	12.28
	8H	13.77	14.20	14.81	15.23	16.60	9.56	9.98	10.59	11.02	12.39
	12H	13.87	14.25	14.92	15.30	16.67	9.63	10.01	10.68	11.06	12.43
8H	4H	13.05	13.47	14.08	14.51	15.87	9.29	9.71	10.32	10.75	12.12
	6H	13.62	13.97	14.67	15.04	16.41	9.81	10.16	10.87	11.24	12.60
	8H	13.83	14.14	14.90	15.20	16.59	10.00	10.31	11.07	11.37	12.76
	12H	13.97	14.24	15.04	15.30	16.73	10.12	10.39	11.19	11.45	12.88
12H	4H	13.00	13.38	14.05	14.43	15.81	9.30	9.68	10.35	10.73	12.10
	6H	13.59	13.90	14.66	14.96	16.35	9.86	10.17	10.92	11.23	12.61
	8H	13.81	14.08	14.88	15.14	16.57	10.07	10.34	11.14	11.40	12.83