

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: P929030

Luminaire Tested: DFN2DIP-HX4F0-090D120US935-RLLONL

Issue Date: 12/12/2024

Test Information

Test Method: LM-79-2019
Report Number: P929030
REPORT IS A COMBINATION OF REPORTS P900974 AND P896187
Test Lab: INNOVATION CENTER
Issue Date: 12/12/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-HX4F0-090D120US935-RLLONL
Description: 4 foot, Hexagon Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

Summary

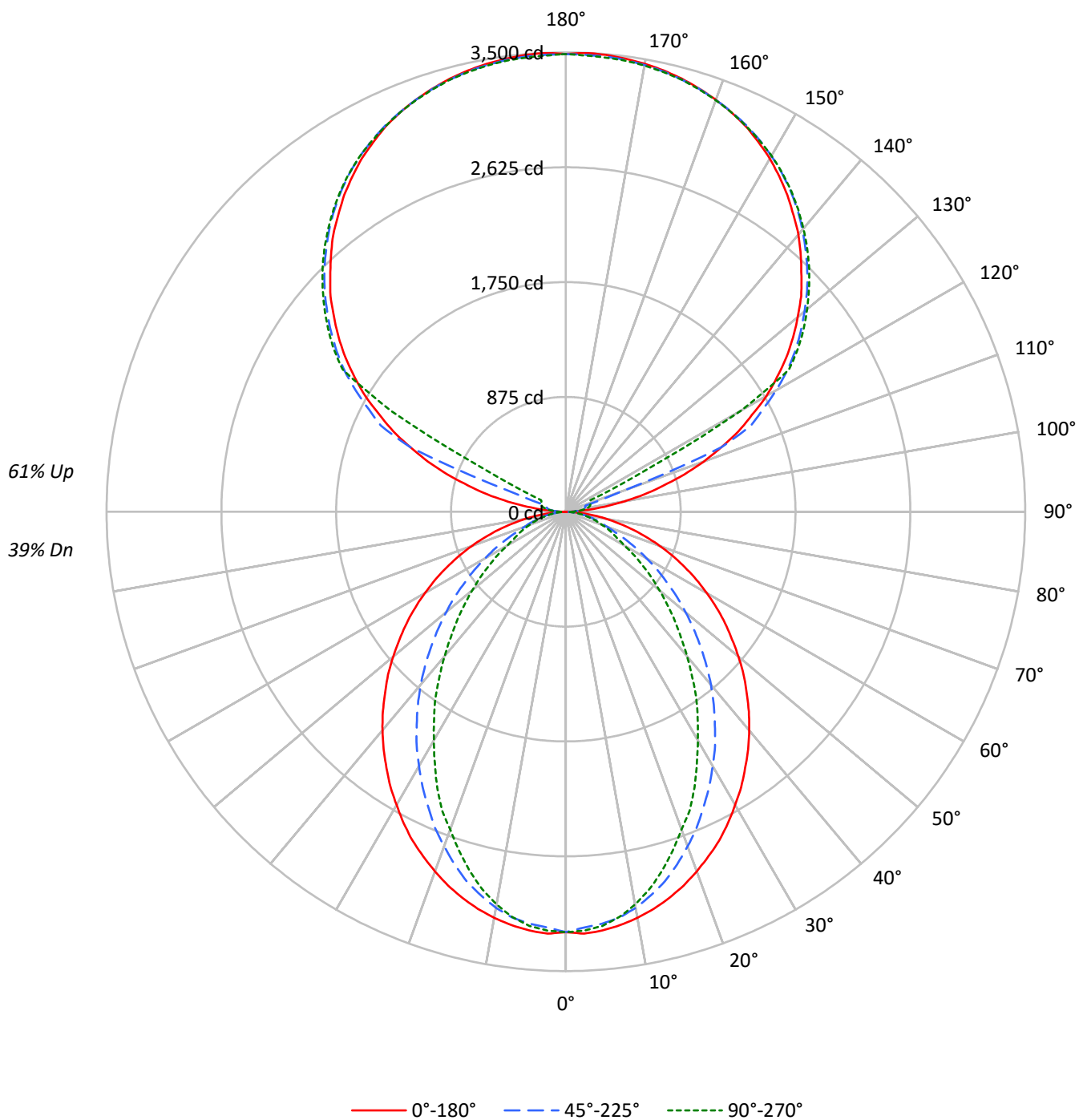
Lumens per Lamp: N/A
Luminaire Lumens: 16815.3 lumens
Efficiency: N/A
Efficacy: 91.1 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16
Luminous Opening: Rectangular w/ Sides (W: 3.54' x L: 4.09' x H: 0.1')
CIE Type: Semi-Indirect

Input Watts (W): 184.6
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	105	105	105	105	95	95	95	95	77	77	77	61	61	61	46	46	46	39		
1	96	92	88	85	87	83	80	78	68	66	64	54	53	52	41	41	40	34		
2	87	80	75	70	79	73	68	64	60	57	54	48	46	44	37	35	34	29		
3	80	71	64	58	73	65	59	54	53	49	46	43	40	37	33	31	29	25		
4	73	63	55	50	67	58	51	46	48	43	39	38	35	32	30	27	26	22		
5	67	56	48	43	61	52	45	40	43	38	34	35	31	28	27	25	23	19		
6	62	51	43	37	56	46	40	35	39	34	30	31	28	25	25	22	20	17		
7	57	46	38	33	52	42	35	31	35	30	26	29	25	22	23	20	18	15		
8	53	42	34	29	49	38	32	27	32	27	23	26	22	20	21	18	16	14		
9	50	38	31	26	45	35	29	24	29	24	21	24	20	18	19	17	15	12		
10	46	35	28	23	42	32	26	22	27	22	19	22	19	16	18	15	13	11		

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	2381	2381	2381
5°	2385	2344	2359
10°	2362	2298	2282
15°	2330	2222	2164
20°	2287	2118	2018
25°	2243	2001	1878
30°	2184	1881	1699
35°	2126	1751	1543
40°	2068	1618	1363
45°	1999	1469	1200
50°	1929	1319	1041
55°	1855	1159	889
60°	1770	992	732
65°	1672	822	659
70°	1553	663	596
75°	1404	585	543
80°	1188	491	471
85°	830	329	355

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°
Vertical Angle: 45°
Luminance: 1999 cd/sqm

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	300.2	1.8
10°-20°	824.0	4.9
20°-30°	1156.9	6.9
30°-40°	1261.0	7.5
40°-50°	1159.0	6.9
50°-60°	910.3	5.4
60°-70°	592.5	3.5
70°-80°	305.0	1.8
80°-90°	84.0	0.5
90°-100°	115.0	0.7
100°-110°	428.6	2.5
110°-120°	1136.8	6.8
120°-130°	1885.4	11.2
130°-140°	2002.8	11.9
140°-150°	1861.3	11.1
150°-160°	1496.5	8.9
160°-170°	964.3	5.7
170°-180°	331.9	2.0
0°-30°	2281.0	13.6
0°-40°	3542.1	21.1
0°-60°	5611.3	33.4
0°-90°	6592.8	39.2
90°-120°	1680.4	10.0
90°-150°	7429.9	44.2
90°-180°	10223.0	60.8
0°-180°	16815.3	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	3203	3203	3203	3203	3203	
5°	3203	3188	3150	3176	3168	304
15°	3046	3014	2916	2861	2832	858
25°	2765	2672	2481	2362	2319	1272
35°	2383	2235	1980	1797	1733	1491
45°	1948	1753	1449	1243	1174	1504
55°	1481	1255	942	768	713	1323
65°	1000	765	504	406	397	991
75°	533	330	232	212	209	564
85°	124	64	55	55	55	143
90°	2	30	50	63	68	16
95°	164	81	98	111	108	194
105°	767	843	154	182	192	820
115°	1451	1494	1557	389	207	1428
125°	2051	2084	2132	2150	2157	1829
135°	2538	2579	2601	2627	2622	1961
145°	2945	2942	2985	3002	2990	1842
155°	3242	3220	3250	3265	3245	1494
165°	3416	3401	3409	3426	3409	965
175°	3494	3477	3482	3500	3474	333
180°	3487	3487	3487	3487	3487	

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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	3202.7	3202.7	3202.7	3202.7	3202.7
2.5°	3217.1	3202.7	3170.6	3199.9	3194.1
5°	3202.7	3188.2	3150.4	3176.5	3167.9
7.5°	3176.5	3159.3	3118.7	3130.1	3115.6
10°	3141.8	3121.5	3063.7	3054.7	3037.5
12.5°	3098.4	3072.3	2993.9	2976.6	2944.6
15°	3046.1	3014.2	2915.8	2860.7	2831.8
17.5°	2985.3	2938.9	2817.0	2753.4	2707.0
20°	2915.8	2857.7	2712.8	2640.5	2576.5
22.5°	2840.4	2773.7	2605.5	2507.1	2463.8
25°	2765.1	2672.2	2481.0	2362.2	2318.6
27.5°	2675.3	2576.5	2365.0	2228.8	2162.1
30°	2579.6	2469.3	2237.4	2089.8	2011.4
32.5°	2486.7	2353.3	2115.9	1941.9	1869.3
35°	2382.6	2234.6	1979.7	1797.1	1733.1
37.5°	2281.0	2121.5	1852.1	1651.9	1579.7
40°	2173.8	2000.0	1718.6	1512.9	1437.6
42.5°	2063.6	1878.3	1585.4	1370.9	1298.6
45°	1947.8	1753.4	1449.2	1243.2	1173.7
47.5°	1837.6	1631.9	1318.9	1112.8	1049.2
50°	1715.9	1510.1	1191.3	991.1	930.5
52.5°	1596.9	1379.5	1069.5	878.2	823.2
55°	1480.9	1254.9	941.8	768.2	713.1
57.5°	1362.3	1130.4	829.1	666.7	620.3
60°	1240.4	1008.6	710.1	562.4	516.0
62.5°	1121.8	889.9	608.6	469.6	446.5
65°	1000.0	765.1	504.3	405.9	397.0
67.5°	884.1	649.1	405.9	356.4	347.8
70°	762.3	536.3	336.1	307.2	295.5
72.5°	646.4	431.7	281.0	258.0	252.2
75°	533.2	330.3	231.9	211.5	208.8
77.5°	420.3	234.6	182.6	171.0	165.1
80°	315.8	168.2	139.0	127.6	127.6
82.5°	220.2	113.1	95.7	89.8	89.8
85°	124.5	63.6	55.0	55.0	55.0
87.5°	46.4	23.1	23.1	20.3	20.3
90°	2.4	30.2	50.4	63.2	68.0
92.5°	63.2	53.0	60.5	65.6	68.0
95°	163.8	80.6	98.2	111.2	108.5
97.5°	295.2	88.4	128.5	136.3	138.7
100°	446.7	101.0	143.8	163.8	169.0
102.5°	613.0	608.2	148.9	176.5	184.3
105°	767.0	842.8	154.0	181.6	191.7
107.5°	946.2	1009.1	159.1	186.7	196.8
110°	1117.8	1170.6	441.6	189.3	199.2

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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	1279.4	1324.6	1281.8	194.2	201.9
115°	1450.7	1493.6	1556.8	388.6	207.1
117.5°	1599.7	1650.0	1693.2	1332.1	671.1
120°	1766.3	1804.0	1849.5	1879.8	1539.1
122.5°	1907.4	1947.8	1998.5	2013.4	2016.1
125°	2051.2	2084.1	2132.1	2149.7	2157.2
127.5°	2182.4	2217.8	2255.8	2281.0	2283.4
130°	2306.1	2346.6	2374.1	2402.0	2399.6
132.5°	2432.2	2465.2	2492.8	2515.6	2513.2
135°	2538.3	2578.8	2601.3	2626.7	2621.7
137.5°	2649.2	2679.4	2704.9	2730.1	2722.6
140°	2757.7	2778.0	2805.6	2828.4	2815.8
142.5°	2848.7	2866.4	2899.1	2919.1	2906.6
145°	2944.6	2942.0	2984.7	3002.5	2989.8
147.5°	3027.6	3020.1	3063.0	3075.6	3065.7
150°	3108.5	3090.8	3131.3	3146.3	3133.7
152.5°	3176.5	3156.4	3194.2	3209.5	3191.8
155°	3242.1	3219.6	3249.9	3264.9	3244.9
157.5°	3295.1	3275.1	3297.9	3315.5	3295.1
160°	3340.7	3325.4	3340.7	3355.7	3338.0
162.5°	3380.9	3365.9	3378.5	3396.1	3373.4
165°	3416.2	3401.2	3408.7	3426.4	3408.7
167.5°	3444.1	3428.8	3436.6	3454.2	3431.5
170°	3466.8	3451.6	3456.7	3474.3	3451.6
172.5°	3481.8	3466.8	3472.0	3489.6	3466.8
175°	3494.4	3476.7	3481.8	3499.5	3474.3
177.5°	3499.5	3481.8	3484.6	3502.2	3479.5
180°	3487.0	3487.0	3487.0	3487.0	3487.0

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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	9.06	9.81	10.11	10.86	12.28	5.04	5.79	6.09	6.84	8.26
	3H	10.74	11.41	11.80	12.47	13.90	6.22	6.89	7.28	7.95	9.39
	4H	11.34	11.98	12.41	13.04	14.48	6.67	7.30	7.74	8.37	9.81
	6H	11.76	12.34	12.84	13.41	14.87	6.99	7.57	8.07	8.64	10.09
	8H	11.88	12.44	12.97	13.52	14.97	7.08	7.63	8.16	8.71	10.17
	12H	11.94	12.47	13.03	13.55	15.02	7.12	7.65	8.21	8.72	10.20
4H	2H	9.07	9.71	10.15	10.77	12.21	5.62	6.26	6.70	7.32	8.77
	3H	10.90	11.42	11.98	12.51	13.97	6.97	7.50	8.05	8.58	10.04
	4H	11.59	12.07	12.68	13.15	14.63	7.51	8.00	8.60	9.08	10.56
	6H	12.10	12.51	13.20	13.61	15.09	7.93	8.35	9.03	9.45	10.92
	8H	12.27	12.66	13.37	13.75	15.24	8.06	8.45	9.16	9.54	11.03
	12H	12.36	12.71	13.48	13.82	15.31	8.12	8.47	9.24	9.58	11.07
8H	4H	11.55	11.93	12.65	13.03	14.52	7.79	8.18	8.89	9.27	10.76
	6H	12.11	12.43	13.23	13.57	15.05	8.31	8.63	9.43	9.76	11.25
	8H	12.33	12.61	13.46	13.73	15.23	8.50	8.78	9.63	9.90	11.40
	12H	12.46	12.71	13.59	13.82	15.37	8.62	8.86	9.75	9.98	11.52
12H	4H	11.50	11.85	12.61	12.95	14.45	7.79	8.14	8.91	9.25	10.74
	6H	12.09	12.37	13.21	13.49	14.99	8.36	8.64	9.48	9.75	11.26
	8H	12.31	12.55	13.44	13.67	15.21	8.56	8.81	9.69	9.92	11.47

END OF REPORT