

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: P913613

Luminaire Tested: DFN2DIP-HX4F0-040D110US927-RLLFLL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P913613
REPORT IS A COMBINATION OF REPORTS P899426 AND P896188
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-HX4F0-040D110US927-RLLFLL
Description: 4 foot, Hexagon Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Frosted Lens
Light Source: -
Ballast/Driver: -

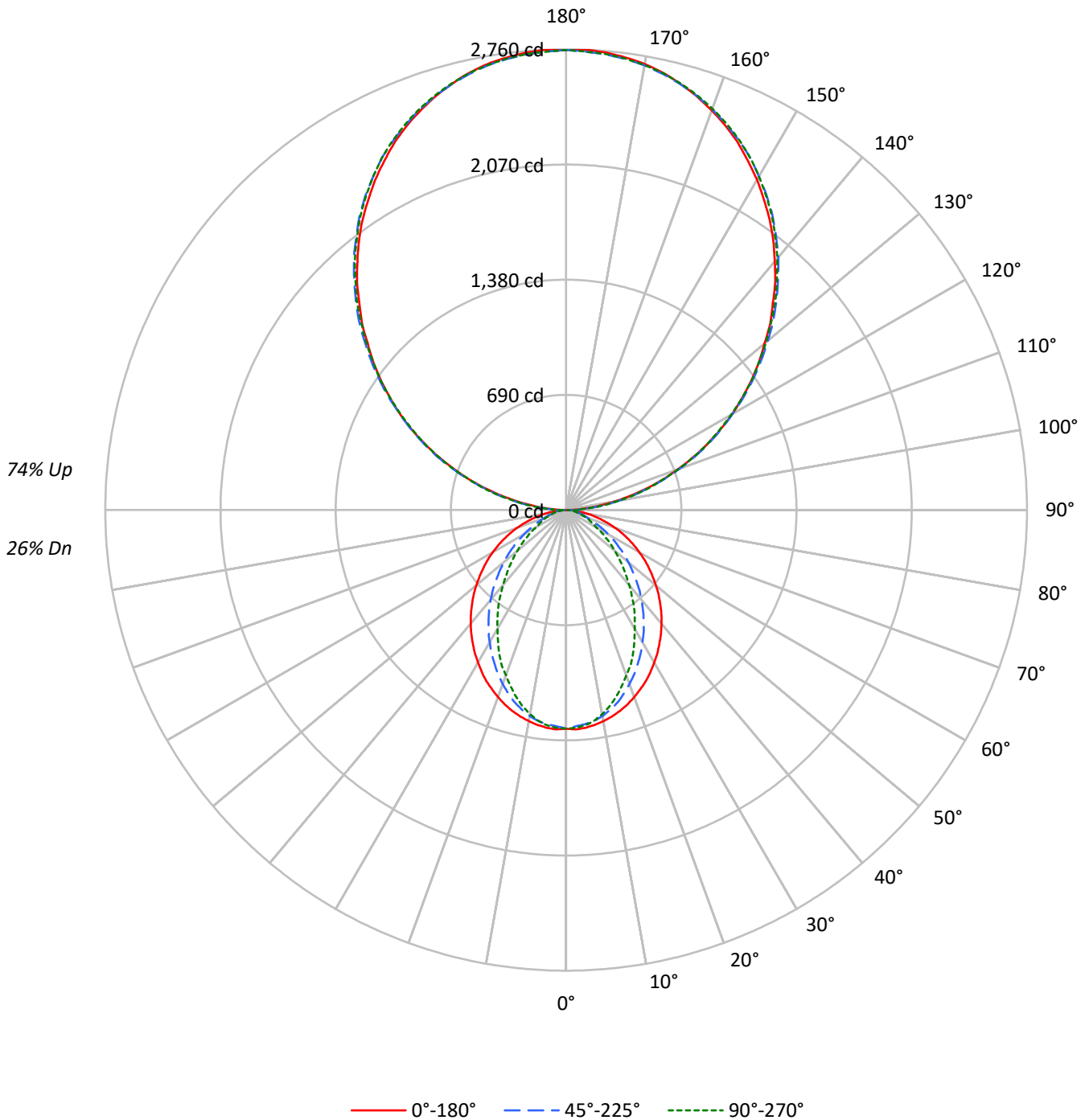
Summary

Lumens per Lamp: N/A
Luminaire Lumens: 10405.3 lumens
Efficiency: N/A
Efficacy: 105.6 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): 98.5
Input Voltage (V):
Input Current (A_{in}): NR
Voltage Rise (V): NR
Power Factor: 0.9977
Total Harmonic Distortion (THDi): 0.049
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				20	
RC	80				70				50				30				10				0	
RW	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	50	30	10	0	
RCR																						
0	101	101	101	101	90	90	90	90	70	70	70	51	51	51	34	34	34	26				26
1	93	89	85	82	82	79	76	73	62	60	58	45	44	43	30	30	29	22				22
2	85	78	72	67	75	69	65	61	54	51	48	40	38	36	27	26	25	19				19
3	77	68	61	56	69	61	55	51	48	44	41	36	33	31	24	23	21	16				16
4	71	61	53	47	63	54	48	43	43	38	35	32	29	27	22	20	19	14				14
5	65	54	46	41	58	48	42	37	38	34	30	29	26	23	20	18	16	13				13
6	60	48	41	35	53	43	37	32	34	30	26	26	23	20	18	16	15	11				11
7	55	43	36	31	49	39	33	28	31	26	23	24	20	18	16	14	13	10				10
8	51	39	32	27	46	36	29	25	28	24	20	21	18	16	15	13	12	9				9
9	47	36	29	24	42	32	26	22	26	21	18	20	17	14	14	12	11	8				8
10	44	33	26	21	40	30	24	20	24	19	16	18	15	13	13	11	10	8				8

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	974	974	974
5°	975	958	965
10°	966	940	933
15°	953	909	885
20°	935	866	825
25°	917	818	768
30°	893	769	695
35°	870	716	631
40°	845	661	557
45°	818	601	491
50°	789	540	426
55°	759	474	363
60°	724	406	299
65°	684	336	269
70°	635	271	244
75°	574	239	222
80°	485	201	193
85°	339	135	145

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 90°
 Vertical Angle: 90°
 Luminance: 2077 cd/sqm



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	122.7	1.2
10°-20°	336.9	3.2
20°-30°	473.1	4.5
30°-40°	515.7	5.0
40°-50°	473.9	4.6
50°-60°	372.2	3.6
60°-70°	242.3	2.3
70°-80°	124.7	1.2
80°-90°	39.7	0.4
90°-100°	170.5	1.6
100°-110°	541.8	5.2
110°-120°	927.3	8.9
120°-130°	1219.5	11.7
130°-140°	1368.8	13.2
140°-150°	1342.3	12.9
150°-160°	1126.0	10.8
160°-170°	746.7	7.2
170°-180°	261.0	2.5
0°-30°	932.7	9.0
0°-40°	1448.4	13.9
0°-60°	2294.6	22.1
0°-90°	2701.2	26.0
90°-120°	1639.7	15.8
90°-150°	5570.3	53.5
90°-180°	7704.0	74.0
0°-180°	10405.3	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	1310	1310	1310	1310	1310	
5°	1310	1304	1288	1299	1296	124
15°	1246	1233	1192	1170	1158	351
25°	1131	1093	1014	966	948	520
35°	974	914	810	735	709	610
45°	796	717	593	508	480	615
55°	606	513	385	314	292	541
65°	409	313	206	166	162	405
75°	218	135	95	86	85	231
85°	51	26	22	22	22	58
90°	2	30	81	76	79	10
95°	121	145	149	149	145	135
105°	500	507	512	516	516	528
115°	931	944	940	937	931	920
125°	1353	1374	1368	1360	1358	1209
135°	1751	1776	1781	1779	1772	1353
145°	2125	2142	2155	2158	2149	1328
155°	2430	2437	2444	2456	2448	1119
165°	2644	2641	2641	2658	2646	746
175°	2751	2744	2739	2756	2742	261
180°	2756	2756	2756	2756	2756	



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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	1309.6	1309.6	1309.6	1309.6	1309.6
2.5°	1315.6	1309.6	1296.6	1308.5	1306.1
5°	1309.6	1303.7	1288.2	1298.9	1295.5
7.5°	1298.9	1291.9	1275.3	1279.9	1274.1
10°	1284.8	1276.4	1252.8	1249.1	1242.1
12.5°	1267.0	1256.3	1224.2	1217.2	1204.1
15°	1245.6	1232.6	1192.3	1169.8	1158.0
17.5°	1220.8	1201.7	1151.9	1125.9	1106.9
20°	1192.3	1168.5	1109.3	1079.7	1053.6
22.5°	1161.5	1134.2	1065.4	1025.2	1007.5
25°	1130.7	1092.7	1014.5	966.0	948.1
27.5°	1094.0	1053.6	967.1	911.4	884.1
30°	1054.9	1009.7	914.9	854.5	822.5
32.5°	1016.9	962.3	865.2	794.1	764.4
35°	974.3	913.8	809.5	734.8	708.7
37.5°	932.8	867.5	757.3	675.5	645.9
40°	888.9	817.8	702.8	618.7	587.9
42.5°	843.8	768.0	648.3	560.5	531.0
45°	796.5	717.0	592.6	508.4	480.0
47.5°	751.5	667.3	539.3	455.1	429.0
50°	701.6	617.5	487.1	405.3	380.5
52.5°	653.0	564.1	437.4	359.1	336.6
55°	605.6	513.2	385.2	314.1	291.6
57.5°	557.1	462.2	339.0	272.6	253.7
60°	507.2	412.4	290.3	230.0	211.0
62.5°	458.8	363.9	248.8	192.0	182.6
65°	408.9	312.8	206.2	166.0	162.3
67.5°	361.6	265.5	166.0	145.8	142.2
70°	311.7	219.3	137.4	125.6	120.8
72.5°	264.4	176.6	114.9	105.5	103.1
75°	218.0	135.1	94.8	86.5	85.4
77.5°	171.9	95.9	74.7	69.9	67.5
80°	129.1	68.8	56.8	52.2	52.2
82.5°	90.1	46.3	39.1	36.7	36.7
85°	50.9	26.1	22.5	22.5	22.5
87.5°	19.0	9.4	9.4	8.3	8.3
90°	2.5	29.9	81.4	76.4	78.9
92.5°	51.5	69.8	72.2	74.8	74.8
95°	121.3	144.6	148.7	148.7	144.6
97.5°	201.9	223.5	232.7	232.7	232.7
100°	294.9	314.0	320.7	320.7	318.2
102.5°	393.0	407.1	416.3	418.7	416.3
105°	500.2	506.8	511.8	515.9	515.9
107.5°	606.5	616.5	616.5	618.1	606.5
110°	709.6	722.9	722.9	722.9	716.2



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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	820.9	835.0	832.5	825.8	820.9
115°	930.6	943.8	939.7	937.2	930.6
117.5°	1039.4	1057.6	1046.0	1039.4	1032.8
120°	1149.1	1167.4	1149.1	1149.1	1141.6
122.5°	1248.8	1272.0	1260.4	1253.7	1248.8
125°	1353.4	1374.2	1367.5	1360.1	1357.6
127.5°	1455.6	1481.4	1472.3	1462.3	1455.6
130°	1551.2	1581.1	1576.9	1571.9	1562.8
132.5°	1658.4	1681.6	1683.3	1671.7	1665.0
135°	1750.6	1776.3	1781.3	1778.8	1772.2
137.5°	1853.6	1874.4	1878.5	1876.8	1866.9
140°	1944.2	1964.9	1976.6	1976.6	1967.5
142.5°	2037.3	2058.0	2064.7	2067.1	2058.0
145°	2125.3	2141.9	2155.2	2157.7	2148.6
147.5°	2204.2	2225.0	2235.0	2239.1	2230.0
150°	2285.7	2299.8	2308.9	2316.4	2308.9
152.5°	2357.9	2372.0	2383.7	2392.9	2383.7
155°	2430.3	2436.8	2444.4	2456.0	2448.5
157.5°	2492.5	2497.5	2501.6	2518.3	2506.6
160°	2548.2	2553.2	2555.7	2569.8	2559.9
162.5°	2599.7	2599.7	2602.2	2618.0	2606.4
165°	2643.7	2641.2	2641.2	2657.8	2646.2
167.5°	2683.6	2676.1	2676.1	2692.8	2681.1
170°	2713.5	2706.9	2704.4	2721.0	2706.9
172.5°	2734.3	2727.6	2725.2	2741.8	2727.6
175°	2750.9	2744.3	2739.3	2755.9	2741.8
177.5°	2760.0	2753.4	2748.4	2762.6	2748.4
180°	2755.9	2755.9	2755.9	2755.9	2755.9



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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	4.23	4.90	5.37	6.03	7.61	0.20	0.87	1.35	2.00	3.58
	3H	5.90	6.49	7.05	7.63	9.23	1.38	1.98	2.53	3.12	4.71
	4H	6.50	7.06	7.66	8.20	9.80	1.83	2.39	2.99	3.53	5.13
	6H	6.91	7.43	8.08	8.57	10.18	2.14	2.66	3.31	3.80	5.41
	8H	7.03	7.53	8.20	8.68	10.29	2.23	2.72	3.40	3.88	5.48
	12H	7.09	7.56	8.27	8.71	10.34	2.27	2.73	3.44	3.88	5.51
4H	2H	4.23	4.79	5.40	5.93	7.53	0.78	1.35	1.95	2.48	4.08
	3H	6.04	6.52	7.22	7.68	9.29	2.12	2.59	3.29	3.75	5.36
	4H	6.73	7.16	7.91	8.32	9.95	2.66	3.09	3.83	4.25	5.88
	6H	7.24	7.61	8.42	8.78	10.40	3.07	3.44	4.25	4.62	6.24
	8H	7.41	7.76	8.59	8.92	10.56	3.20	3.54	4.38	4.71	6.35
	12H	7.50	7.81	8.69	8.99	10.63	3.26	3.57	4.45	4.75	6.39
8H	4H	6.69	7.03	7.86	8.20	9.84	2.93	3.27	4.11	4.44	6.08
	6H	7.25	7.53	8.45	8.74	10.38	3.44	3.73	4.64	4.94	6.57
	8H	7.47	7.71	8.67	8.90	10.55	3.63	3.88	4.84	5.07	6.72
	12H	7.60	7.82	8.80	9.00	10.69	3.75	3.97	4.95	5.15	6.84
12H	4H	6.63	6.95	7.82	8.12	9.76	2.93	3.24	4.12	4.42	6.06
	6H	7.22	7.47	8.43	8.66	10.31	3.49	3.74	4.69	4.93	6.58
	8H	7.44	7.66	8.64	8.84	10.53	3.70	3.91	4.90	5.10	6.78