

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: P908278

Luminaire Tested: DFN2DIP-HX4F0-110D090US840-FLLFLL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P908278
REPORT IS A COMBINATION OF REPORTS P899403 AND P896188
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-HX4F0-110D090US840-FLLFLL
Description: 4 foot, Hexagon Define Geo, with Direct Frosted Lens, Indirect Frosted Lens
Light Source: -
Ballast/Driver: -

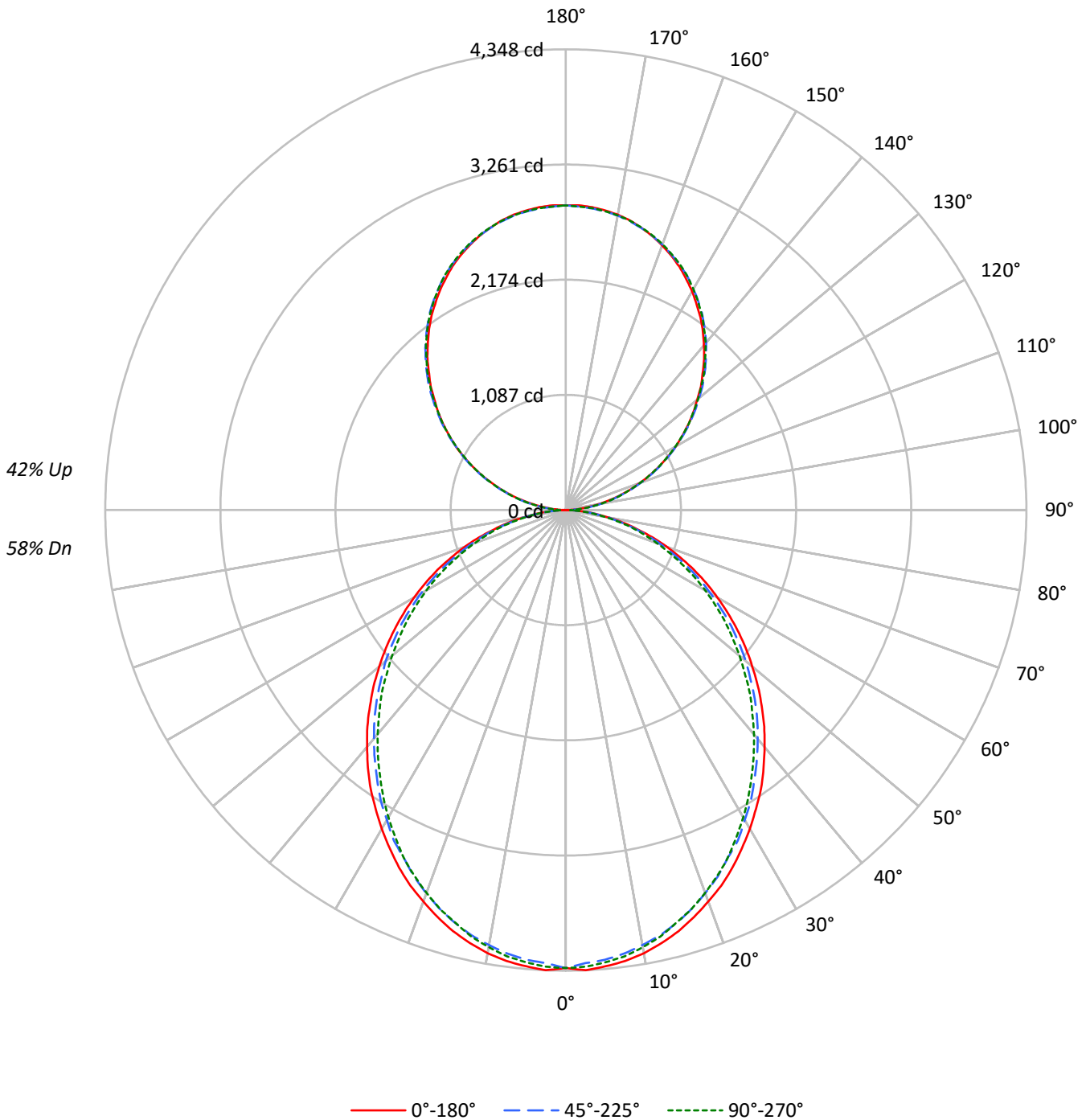
Summary

Lumens per Lamp: N/A
Luminaire Lumens: 19041.0 lumens
Efficiency: N/A
Efficacy: 116.6 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): 163.3
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		0	
RW	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	50	30	10
RCR																				
0	109	109	109	109	102	102	102	102	88	88	88	75	75	75	63	63	63	58		
1	100	95	91	88	93	89	85	82	77	74	72	66	64	62	56	55	53	49		
2	91	83	77	72	84	78	72	68	67	63	60	58	55	52	49	47	45	41		
3	83	73	66	60	77	68	62	56	59	54	50	51	47	44	44	41	38	35		
4	76	65	57	51	70	61	53	48	53	47	43	46	41	38	39	36	33	30		
5	70	58	49	43	65	54	47	41	47	42	37	41	36	33	35	32	29	26		
6	64	52	44	38	60	49	41	36	43	37	32	37	32	29	32	28	25	23		
7	59	47	39	33	55	44	37	32	39	33	29	34	29	26	29	25	23	20		
8	55	43	35	29	51	40	33	28	35	30	25	31	26	23	27	23	20	18		
9	51	39	31	26	48	37	30	25	32	27	23	29	24	21	25	21	18	16		
10	48	36	28	24	45	34	27	23	30	24	21	26	22	19	23	19	17	15		

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	3214	3214	3214
5°	3219	3169	3191
10°	3194	3127	3148
15°	3147	3076	3080
20°	3084	3005	3011
25°	3021	2920	2932
30°	2942	2840	2830
35°	2867	2747	2723
40°	2775	2652	2621
45°	2684	2557	2516
50°	2583	2458	2395
55°	2478	2343	2284
60°	2360	2206	2157
65°	2231	2066	2007
70°	2066	1893	1845
75°	1838	1687	1696
80°	1564	1425	1411
85°	1135	971	938

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°
 Vertical Angle: 45°
 Luminance: 2684 cd/sqm



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	406.8	2.1
10°-20°	1144.7	6.0
20°-30°	1682.2	8.8
30°-40°	1953.7	10.3
40°-50°	1951.3	10.2
50°-60°	1701.5	8.9
60°-70°	1257.8	6.6
70°-80°	711.6	3.7
80°-90°	196.0	1.0
90°-100°	177.9	0.9
100°-110°	565.2	3.0
110°-120°	967.2	5.1
120°-130°	1272.0	6.7
130°-140°	1427.7	7.5
140°-150°	1400.0	7.4
150°-160°	1174.4	6.2
160°-170°	778.9	4.1
170°-180°	272.2	1.4
0°-30°	3233.7	17.0
0°-40°	5187.4	27.2
0°-60°	8840.2	46.4
0°-90°	11005.6	57.8
90°-120°	1710.2	9.0
90°-150°	5809.9	30.5
90°-180°	8035.0	42.2
0°-180°	19041.0	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	4322	4322	4322	4322	4322	
5°	4322	4306	4260	4293	4285	410
15°	4115	4090	4036	4052	4032	1159
25°	3724	3691	3620	3628	3620	1714
35°	3213	3172	3105	3080	3059	2006
45°	2614	2585	2523	2477	2461	2018
55°	1979	1954	1904	1854	1833	1769
65°	1334	1309	1268	1230	1210	1319
75°	698	690	669	644	653	745
85°	170	166	162	150	146	190
90°	3	31	85	80	82	18
95°	126	151	155	155	151	141
105°	522	529	534	538	538	551
115°	971	984	980	978	971	960
125°	1412	1433	1426	1419	1416	1261
135°	1826	1853	1858	1855	1848	1411
145°	2217	2234	2248	2250	2241	1385
155°	2535	2542	2550	2562	2554	1167
165°	2757	2755	2755	2772	2760	778
175°	2869	2862	2857	2874	2860	273
180°	2874	2874	2874	2874	2874	



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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	4322.4	4322.4	4322.4	4322.4	4322.4
2.5°	4347.5	4326.8	4280.9	4322.4	4314.4
5°	4322.4	4306.1	4260.2	4293.2	4285.4
7.5°	4293.2	4268.6	4222.8	4256.3	4247.9
10°	4247.9	4218.7	4168.9	4201.9	4189.6
12.5°	4185.3	4160.5	4110.8	4131.5	4123.1
15°	4114.7	4090.0	4035.7	4052.5	4031.8
17.5°	4027.3	4002.7	3948.5	3969.2	3948.5
20°	3931.7	3907.0	3848.8	3861.1	3844.9
22.5°	3836.5	3798.9	3744.7	3744.7	3736.3
25°	3724.0	3691.0	3620.4	3628.3	3620.4
27.5°	3599.2	3570.1	3516.3	3503.9	3483.2
30°	3474.8	3441.3	3379.1	3366.8	3350.0
32.5°	3341.6	3317.0	3250.4	3225.2	3208.4
35°	3212.9	3171.5	3104.8	3079.7	3059.0
37.5°	3067.4	3029.9	2963.3	2934.2	2913.5
40°	2917.9	2884.4	2817.8	2780.8	2764.0
42.5°	2772.4	2738.9	2672.7	2630.8	2606.2
45°	2614.5	2585.4	2522.7	2477.4	2460.6
47.5°	2460.6	2431.6	2364.9	2319.1	2294.3
50°	2298.4	2277.7	2219.4	2161.2	2140.5
52.5°	2140.5	2111.3	2057.6	2011.7	1982.6
55°	1978.6	1953.5	1903.7	1853.8	1833.1
57.5°	1816.3	1795.6	1741.4	1691.5	1674.8
60°	1654.1	1637.8	1579.5	1533.7	1521.4
62.5°	1496.2	1467.1	1425.6	1384.2	1367.5
65°	1334.3	1309.2	1267.8	1230.3	1209.6
67.5°	1168.1	1147.0	1109.9	1080.9	1064.1
70°	1014.2	997.4	960.0	930.9	914.5
72.5°	856.4	839.6	818.9	789.8	777.4
75°	698.0	690.1	668.9	644.3	652.7
77.5°	556.9	540.2	531.8	519.5	507.2
80°	415.9	411.4	403.0	390.7	382.3
82.5°	282.7	282.7	278.7	262.0	262.0
85°	170.3	166.2	162.3	149.5	145.5
87.5°	74.9	66.6	58.2	45.8	41.4
90°	2.6	31.2	84.9	79.7	82.3
92.5°	53.7	72.8	75.4	78.0	78.0
95°	126.5	150.8	155.1	155.1	150.8
97.5°	210.6	233.1	242.7	242.7	242.7
100°	307.6	327.6	334.5	334.5	331.9
102.5°	409.9	424.6	434.1	436.8	434.1
105°	521.7	528.6	533.8	538.2	538.2
107.5°	632.6	643.0	643.0	644.7	632.6
110°	740.0	754.0	754.0	754.0	747.0



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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	856.2	870.9	868.3	861.4	856.2
115°	970.6	984.4	980.1	977.5	970.6
117.5°	1084.1	1103.2	1091.1	1084.1	1077.1
120°	1198.5	1217.5	1198.5	1198.5	1190.6
122.5°	1302.4	1326.8	1314.6	1307.7	1302.4
125°	1411.7	1433.3	1426.4	1418.6	1416.0
127.5°	1518.2	1545.1	1535.6	1525.2	1518.2
130°	1617.9	1649.1	1644.8	1639.5	1630.0
132.5°	1729.7	1753.9	1755.7	1743.5	1736.7
135°	1825.8	1852.7	1858.0	1855.3	1848.5
137.5°	1933.3	1955.0	1959.3	1957.6	1947.2
140°	2027.8	2049.4	2061.5	2061.5	2052.0
142.5°	2124.9	2146.5	2153.4	2156.1	2146.5
145°	2216.8	2234.0	2247.9	2250.5	2241.0
147.5°	2299.1	2320.7	2331.1	2335.4	2325.9
150°	2384.0	2398.7	2408.2	2416.0	2408.2
152.5°	2459.3	2474.1	2486.2	2495.8	2486.2
155°	2534.8	2541.6	2549.5	2561.6	2553.8
157.5°	2599.7	2604.9	2609.3	2626.6	2614.4
160°	2657.8	2663.0	2665.6	2680.3	2669.9
162.5°	2711.5	2711.5	2714.1	2730.6	2718.5
165°	2757.4	2754.8	2754.8	2772.2	2760.1
167.5°	2799.0	2791.3	2791.3	2808.5	2796.4
170°	2830.2	2823.3	2820.8	2838.0	2823.3
172.5°	2851.9	2845.0	2842.4	2859.7	2845.0
175°	2869.2	2862.3	2857.1	2874.5	2859.7
177.5°	2878.7	2871.9	2866.6	2881.3	2866.6
180°	2874.5	2874.5	2874.5	2874.5	2874.5



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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	12.02	12.95	12.91	13.86	15.02	11.59	12.52	12.47	13.43	14.59
	3H	13.69	14.53	14.58	15.44	16.62	13.21	14.05	14.11	14.97	16.15
	4H	14.28	15.07	15.19	15.99	17.18	13.80	14.60	14.72	15.52	16.71
	6H	14.68	15.41	15.61	16.34	17.55	14.21	14.94	15.13	15.87	17.07
	8H	14.79	15.49	15.72	16.43	17.63	14.31	15.01	15.25	15.96	17.16
	12H	14.84	15.50	15.78	16.44	17.67	14.36	15.02	15.30	15.96	17.19
4H	2H	12.49	13.28	13.41	14.21	15.40	12.14	12.94	13.06	13.86	15.05
	3H	14.36	15.03	15.29	15.98	17.18	13.97	14.63	14.90	15.59	16.79
	4H	15.08	15.69	16.02	16.64	17.86	14.68	15.28	15.62	16.23	17.46
	6H	15.60	16.12	16.56	17.10	18.33	15.19	15.71	16.15	16.69	17.92
	8H	15.75	16.24	16.71	17.21	18.45	15.34	15.83	16.30	16.80	18.04
	12H	15.83	16.27	16.81	17.25	18.50	15.41	15.85	16.38	16.83	18.08
8H	4H	15.28	15.77	16.24	16.74	17.98	14.92	15.41	15.88	16.38	17.62
	6H	15.92	16.32	16.90	17.33	18.57	15.56	15.96	16.54	16.97	18.21
	8H	16.14	16.50	17.13	17.50	18.76	15.77	16.13	16.76	17.13	18.39
	12H	16.28	16.59	17.27	17.58	18.89	15.89	16.21	16.89	17.20	18.51
12H	4H	15.27	15.71	16.25	16.70	17.95	14.92	15.36	15.90	16.35	17.59
	6H	15.95	16.31	16.94	17.31	18.57	15.60	15.96	16.59	16.95	18.21
	8H	16.20	16.51	17.19	17.50	18.81	15.84	16.16	16.84	17.14	18.45