

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: P924668

Luminaire Tested: DFN2DIP-HX4F0-120D110US950-FLLFLL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P924668
REPORT IS A COMBINATION OF REPORTS P899441 AND P896188
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-HX4F0-120D110US950-FLLFLL
Description: 4 foot, Hexagon Define Geo, with Direct Frosted Lens, Indirect Frosted Lens
Light Source: -
Ballast/Driver: -

Summary

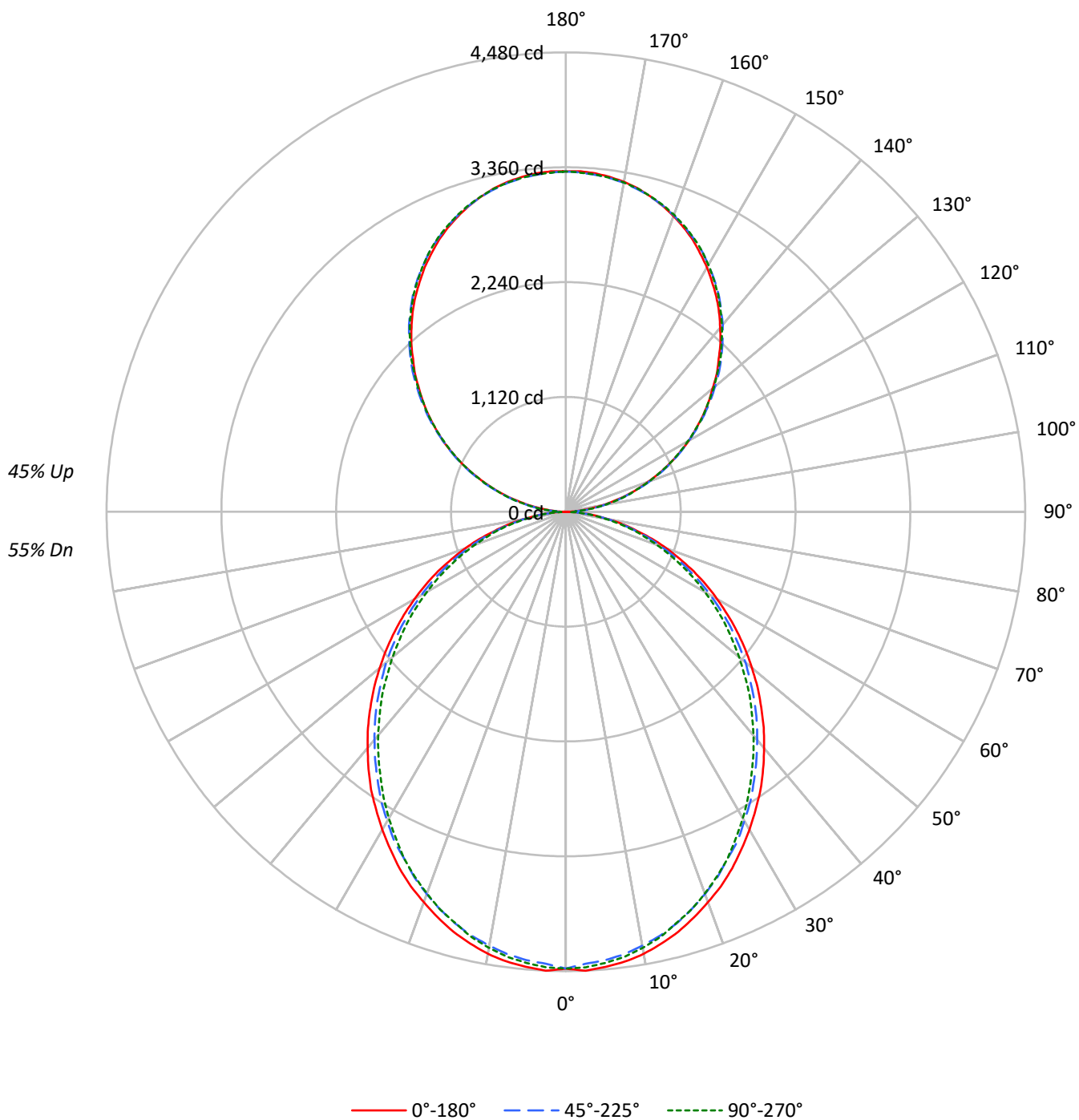
Lumens per Lamp: N/A
Luminaire Lumens: 20620.7 lumens
Efficiency: N/A
Efficacy: 107.7 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.54' x L: 4.09' x H: 0.1')
CIE Type: General Diffuse

Input Watts (W): 191.4
Input Voltage (V):
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.9954
Total Harmonic Distortion (THDi): 0.076
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 24 FT

TEST NUMBER: P924668

CATALOG NUMBER: DFN2DIP-HX4F0-120D110US950-FLLFLL

Luminous Intensity Polar Plot



TEST NUMBER: P924668

CATALOG NUMBER: DFN2DIP-HX4F0-120D110US950-FLLFL

COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:

RF	20					20					20					20					20
RC	80					70					50					30					0
RW	70	50	30	10		70	50	30	10		50	30	10		50	30	10		50	30	10
RCR																					
0	108	108	108	108		101	101	101	101		86	86	86		73	73	73		61	61	61
1	99	95	91	87		92	88	85	81		76	73	71		64	62	61		54	52	51
2	90	83	76	71		83	77	71	67		66	62	59		56	53	51		47	45	43
3	82	73	65	59		76	68	61	56		58	53	49		50	46	43		42	39	37
4	75	64	56	50		70	60	53	47		52	46	42		44	40	37		37	34	32
5	69	57	49	43		64	54	46	41		46	41	36		40	35	32		34	30	28
6	64	51	43	37		59	48	41	35		42	36	32		36	32	28		31	27	24
7	59	46	38	33		55	44	36	31		38	32	28		33	28	25		28	24	22
8	55	42	34	29		51	40	33	28		35	29	25		30	25	22		26	22	19
9	51	39	31	26		47	36	29	25		32	26	22		28	23	20		24	20	18
10	48	35	28	23		44	33	27	22		29	24	20		26	21	18		22	19	16

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	3312	3312	3312
5°	3318	3266	3288
10°	3291	3223	3244
15°	3243	3170	3174
20°	3178	3097	3103
25°	3113	3009	3021
30°	3032	2927	2917
35°	2955	2831	2806
40°	2860	2733	2701
45°	2766	2636	2593
50°	2662	2533	2469
55°	2554	2415	2354
60°	2432	2274	2223
65°	2299	2129	2068
70°	2129	1951	1902
75°	1894	1739	1748
80°	1611	1468	1454
85°	1169	1000	967

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 2766 cd/sqm

TEST NUMBER: P924668

CATALOG NUMBER: DFN2DIP-HX4F0-120D110US950-FLLFLL

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	419.3	2.0
10°-20°	1179.6	5.7
20°-30°	1733.6	8.4
30°-40°	2013.5	9.8
40°-50°	2011.0	9.8
50°-60°	1753.5	8.5
60°-70°	1296.2	6.3
70°-80°	733.4	3.6
80°-90°	203.0	1.0
90°-100°	205.4	1.0
100°-110°	652.5	3.2
110°-120°	1116.7	5.4
120°-130°	1468.6	7.1
130°-140°	1648.4	8.0
140°-150°	1616.5	7.8
150°-160°	1356.0	6.6
160°-170°	899.3	4.4
170°-180°	314.3	1.5
0°-30°	3332.5	16.2
0°-40°	5345.9	25.9
0°-60°	9110.4	44.2
0°-90°	11343.0	55.0
90°-120°	1974.6	9.6
90°-150°	6708.2	32.5
90°-180°	9278.0	45.0
0°-180°	20620.7	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	4454	4454	4454	4454	4454	
5°	4454	4438	4390	4424	4416	423
15°	4240	4215	4159	4176	4155	1194
25°	3838	3804	3731	3739	3731	1766
35°	3311	3268	3200	3174	3152	2068
45°	2694	2664	2600	2553	2536	2079
55°	2039	2013	1962	1910	1889	1823
65°	1375	1349	1306	1268	1247	1360
75°	719	711	689	664	673	768
85°	175	171	167	154	150	196
90°	3	36	98	92	95	20
95°	146	174	179	179	174	163
105°	602	610	616	621	621	636
115°	1121	1137	1132	1129	1121	1108
125°	1630	1655	1647	1638	1635	1457
135°	2108	2139	2145	2142	2134	1630
145°	2559	2579	2596	2598	2587	1599
155°	2927	2935	2944	2958	2949	1347
165°	3184	3181	3181	3201	3187	898
175°	3313	3305	3299	3319	3302	315
180°	3319	3319	3319	3319	3319	

TEST NUMBER: P924668

CATALOG NUMBER: DFN2DIP-HX4F0-120D110US950-FLLFLL

CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	4454.5	4454.5	4454.5	4454.5	4454.5
2.5°	4480.4	4459.0	4411.8	4454.5	4446.3
5°	4454.5	4437.6	4390.4	4424.5	4416.3
7.5°	4424.5	4399.0	4351.8	4386.3	4377.7
10°	4377.7	4347.7	4296.3	4330.4	4317.7
12.5°	4313.1	4287.7	4236.3	4257.7	4249.0
15°	4240.4	4215.0	4159.1	4176.3	4155.0
17.5°	4150.5	4125.0	4069.1	4090.5	4069.1
20°	4051.8	4026.4	3966.4	3979.1	3962.3
22.5°	3953.7	3915.0	3859.1	3859.1	3850.5
25°	3837.8	3803.7	3731.0	3739.2	3731.0
27.5°	3709.2	3679.2	3623.8	3611.0	3589.7
30°	3581.0	3546.5	3482.4	3469.7	3452.4
32.5°	3443.7	3418.4	3349.7	3323.8	3306.6
35°	3311.0	3268.4	3199.7	3173.9	3152.5
37.5°	3161.1	3122.5	3053.8	3023.9	3002.5
40°	3007.1	2972.6	2903.9	2865.7	2848.5
42.5°	2857.1	2822.6	2754.4	2711.3	2685.8
45°	2694.4	2664.4	2599.8	2553.1	2535.8
47.5°	2535.8	2505.8	2437.2	2390.0	2364.5
50°	2368.6	2347.2	2287.2	2227.2	2205.8
52.5°	2205.8	2175.9	2120.5	2073.1	2043.2
55°	2039.1	2013.2	1961.8	1910.5	1889.1
57.5°	1871.8	1850.5	1794.6	1743.2	1726.0
60°	1704.6	1687.8	1627.8	1580.6	1567.8
62.5°	1542.0	1511.9	1469.3	1426.5	1409.2
65°	1375.2	1349.2	1306.5	1267.9	1246.6
67.5°	1203.9	1182.0	1143.8	1113.9	1096.6
70°	1045.2	1027.9	989.3	959.3	942.6
72.5°	882.5	865.3	843.9	814.0	801.2
75°	719.4	711.2	689.4	664.0	672.6
77.5°	573.9	556.7	548.1	535.3	522.6
80°	428.5	424.0	415.4	402.7	394.0
82.5°	291.3	291.3	287.2	270.0	270.0
85°	175.4	171.3	167.2	154.1	150.0
87.5°	77.3	68.6	60.0	47.2	42.7
90°	3.0	36.1	98.1	92.1	95.0
92.5°	62.0	84.0	87.0	90.1	90.1
95°	146.1	174.1	179.1	179.1	174.1
97.5°	243.2	269.1	280.2	280.2	280.2
100°	355.2	378.2	386.2	386.2	383.2
102.5°	473.3	490.3	501.3	504.3	501.3
105°	602.4	610.4	616.4	621.3	621.3
107.5°	730.4	742.4	742.4	744.4	730.4
110°	854.5	870.5	870.5	870.5	862.5

TEST NUMBER: P924668

CATALOG NUMBER: DFN2DIP-HX4F0-120D110US950-FLLFLL

CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	988.5	1005.5	1002.6	994.5	988.5
115°	1120.7	1136.6	1131.6	1128.7	1120.7
117.5°	1251.7	1273.7	1259.7	1251.7	1243.7
120°	1383.8	1405.8	1383.8	1383.8	1374.8
122.5°	1503.9	1531.8	1517.8	1509.8	1503.9
125°	1629.9	1654.9	1646.9	1637.9	1634.9
127.5°	1753.0	1784.0	1773.0	1761.0	1753.0
130°	1868.0	1904.1	1899.0	1893.0	1882.1
132.5°	1997.1	2025.2	2027.2	2013.1	2005.1
135°	2108.1	2139.2	2145.2	2142.2	2134.2
137.5°	2232.3	2257.3	2262.2	2260.2	2248.3
140°	2341.3	2366.3	2380.3	2380.3	2369.4
142.5°	2453.4	2478.4	2486.4	2489.4	2478.4
145°	2559.4	2579.4	2595.5	2598.4	2587.4
147.5°	2654.5	2679.5	2691.5	2696.5	2685.5
150°	2752.6	2769.6	2780.5	2789.6	2780.5
152.5°	2839.6	2856.6	2870.6	2881.7	2870.6
155°	2926.7	2934.6	2943.7	2957.7	2948.6
157.5°	3001.7	3007.7	3012.6	3032.7	3018.6
160°	3068.7	3074.7	3077.7	3094.8	3082.8
162.5°	3130.7	3130.7	3133.8	3152.8	3138.8
165°	3183.8	3180.7	3180.7	3200.8	3186.7
167.5°	3231.8	3222.8	3222.8	3242.8	3228.8
170°	3267.8	3259.8	3256.9	3276.8	3259.8
172.5°	3292.8	3284.8	3281.9	3301.9	3284.8
175°	3312.9	3304.8	3298.8	3318.9	3301.9
177.5°	3323.8	3315.8	3309.8	3326.9	3309.8
180°	3318.9	3318.9	3318.9	3318.9	3318.9

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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	11.88	12.79	12.80	13.72	14.92	11.45	12.36	12.36	13.29	14.49
	3H	13.55	14.36	14.47	15.30	16.53	13.07	13.89	14.00	14.83	16.05
	4H	14.14	14.91	15.08	15.85	17.09	13.66	14.44	14.60	15.38	16.61
	6H	14.54	15.25	15.49	16.20	17.45	14.07	14.78	15.02	15.73	16.97
	8H	14.65	15.32	15.61	16.29	17.54	14.17	14.85	15.13	15.82	17.06
	12H	14.70	15.34	15.66	16.30	17.57	14.22	14.86	15.18	15.82	17.09
4H	2H	12.35	13.12	13.30	14.07	15.30	12.01	12.78	12.95	13.72	14.95
	3H	14.22	14.87	15.18	15.84	17.09	13.83	14.47	14.78	15.45	16.69
	4H	14.94	15.53	15.90	16.50	17.77	14.53	15.12	15.50	16.09	17.36
	6H	15.46	15.96	16.44	16.96	18.23	15.05	15.56	16.03	16.55	17.82
	8H	15.61	16.08	16.59	17.07	18.35	15.20	15.67	16.18	16.66	17.94
	12H	15.69	16.11	16.68	17.12	18.41	15.26	15.69	16.26	16.69	17.98
8H	4H	15.14	15.61	16.12	16.60	17.88	14.78	15.25	15.76	16.24	17.52
	6H	15.77	16.17	16.78	17.20	18.48	15.41	15.80	16.42	16.83	18.11
	8H	16.00	16.34	17.01	17.36	18.66	15.63	15.97	16.64	16.99	18.29
	12H	16.13	16.44	17.15	17.45	18.79	15.75	16.05	16.76	17.06	18.41
12H	4H	15.13	15.56	16.13	16.56	17.85	14.78	15.20	15.77	16.21	17.50
	6H	15.81	16.15	16.82	17.17	18.47	15.45	15.80	16.47	16.82	18.12
	8H	16.05	16.36	17.07	17.37	18.71	15.69	16.00	16.71	17.01	18.35