

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: P916474

Luminaire Tested: DFN2DIP-HX4F0-120D060US930-FLLFLL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P916474
REPORT IS A COMBINATION OF REPORTS P899351 AND P896188
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-HX4F0-120D060US930-FLLFLL
Description: 4 foot, Hexagon Define Geo, with Direct Frosted Lens, Indirect Frosted Lens
Light Source: -
Ballast/Driver: -

Summary

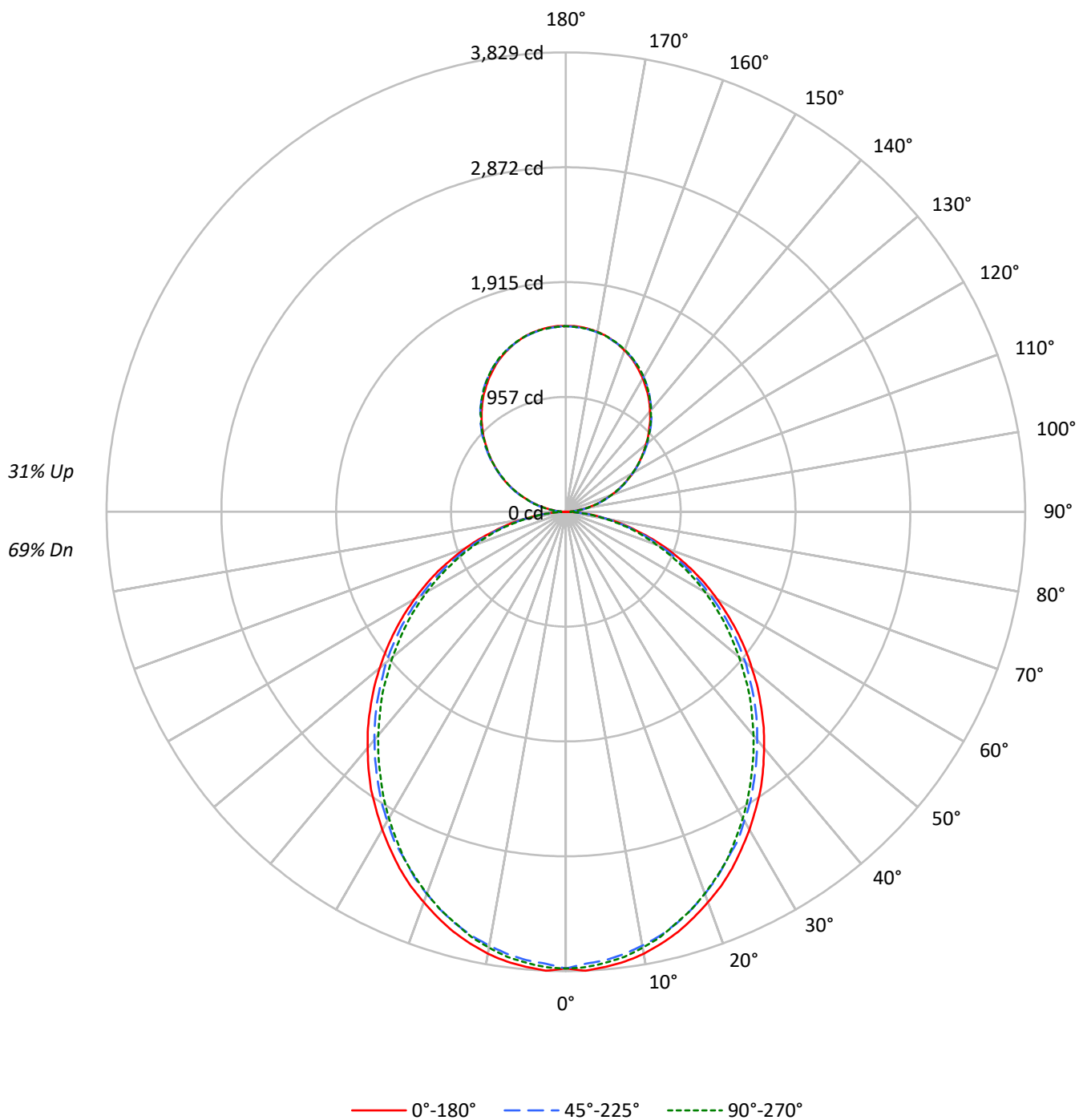
Lumens per Lamp: N/A
Luminaire Lumens: 14015.0 lumens
Efficiency: N/A
Efficacy: 87.5 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.54' x L: 4.09' x H: 0.1')
CIE Type: Semi-Direct

Input Watts (W): 160.2
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

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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	112	112	112	112	106	106	106	106	94	94	94	83	83	83	74	74	74
1	102	98	94	90	96	92	89	86	83	80	77	74	71	70	65	64	62
2	93	85	79	74	88	81	75	70	72	68	64	65	61	58	57	55	52
3	85	75	67	61	80	71	64	59	64	58	54	57	53	49	51	48	45
4	78	67	58	52	73	63	56	50	57	51	46	51	46	42	46	42	39
5	71	59	51	45	67	56	49	43	51	45	40	46	41	37	41	37	34
6	66	53	45	39	62	51	43	38	46	40	35	41	36	32	37	33	30
7	61	48	40	34	58	46	39	33	42	36	31	38	33	29	34	30	26
8	57	44	36	31	54	42	35	30	38	32	28	35	29	26	31	27	24
9	53	40	33	27	50	39	31	26	35	29	25	32	27	23	29	25	21
10	50	37	30	25	47	36	29	24	32	27	22	30	25	21	27	23	20

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	2831	2831	2831
5°	2835	2791	2810
10°	2813	2754	2772
15°	2771	2709	2713
20°	2716	2646	2652
25°	2661	2571	2582
30°	2591	2501	2493
35°	2525	2419	2398
40°	2444	2336	2308
45°	2364	2253	2216
50°	2275	2165	2110
55°	2183	2064	2012
60°	2078	1943	1900
65°	1965	1819	1767
70°	1820	1667	1625
75°	1619	1486	1494
80°	1377	1255	1243
85°	999	855	827

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 2364 cd/sqm

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	358.3	2.6
10°-20°	1008.1	7.2
20°-30°	1481.5	10.6
30°-40°	1720.7	12.3
40°-50°	1718.6	12.3
50°-60°	1498.5	10.7
60°-70°	1107.8	7.9
70°-80°	626.7	4.5
80°-90°	169.8	1.2
90°-100°	95.7	0.7
100°-110°	304.2	2.2
110°-120°	520.6	3.7
120°-130°	684.6	4.9
130°-140°	768.4	5.5
140°-150°	753.5	5.4
150°-160°	632.1	4.5
160°-170°	419.2	3.0
170°-180°	146.5	1.0
0°-30°	2848.0	20.3
0°-40°	4568.7	32.6
0°-60°	7785.8	55.6
0°-90°	9690.1	69.1
90°-120°	920.5	6.6
90°-150°	3127.0	22.3
90°-180°	4325.0	30.9
0°-180°	14015.0	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	3807	3807	3807	3807	3807	
5°	3807	3792	3752	3781	3774	361
15°	3624	3602	3554	3569	3551	1021
25°	3280	3251	3188	3196	3188	1509
35°	2830	2793	2734	2712	2694	1767
45°	2303	2277	2222	2182	2167	1777
55°	1743	1720	1677	1633	1614	1558
65°	1175	1153	1117	1084	1065	1162
75°	615	608	589	567	575	656
85°	150	146	143	132	128	167
90°	1	17	46	43	44	13
95°	68	81	84	84	81	76
105°	281	284	287	290	290	296
115°	522	530	528	526	522	517
125°	760	771	768	764	762	679
135°	983	997	1000	999	995	760
145°	1193	1202	1210	1211	1206	745
155°	1364	1368	1372	1379	1374	628
165°	1484	1483	1483	1492	1486	419
175°	1544	1541	1538	1547	1539	147
180°	1547	1547	1547	1547	1547	

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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	3806.9	3806.9	3806.9	3806.9	3806.9
2.5°	3829.0	3810.7	3770.3	3806.9	3799.9
5°	3806.9	3792.4	3752.1	3781.2	3774.2
7.5°	3781.2	3759.4	3719.1	3748.6	3741.2
10°	3741.2	3715.6	3671.7	3700.8	3690.0
12.5°	3686.0	3664.3	3620.4	3638.7	3631.3
15°	3623.9	3602.2	3554.4	3569.1	3550.9
17.5°	3547.0	3525.3	3477.5	3495.8	3477.5
20°	3462.7	3441.0	3389.8	3400.6	3386.3
22.5°	3378.8	3345.8	3298.0	3298.0	3290.7
25°	3279.8	3250.7	3188.5	3195.6	3188.5
27.5°	3169.9	3144.3	3096.9	3086.0	3067.8
30°	3060.4	3030.9	2976.1	2965.2	2950.5
32.5°	2943.1	2921.4	2862.7	2840.6	2825.8
35°	2829.7	2793.2	2734.5	2712.4	2694.2
37.5°	2701.5	2668.6	2609.9	2584.3	2566.0
40°	2569.9	2540.4	2481.7	2449.1	2434.3
42.5°	2441.7	2412.2	2353.9	2317.1	2295.3
45°	2302.6	2277.0	2221.9	2181.9	2167.1
47.5°	2167.1	2141.5	2082.8	2042.5	2020.7
50°	2024.2	2006.0	1954.7	1903.4	1885.1
52.5°	1885.1	1859.5	1812.2	1771.7	1746.1
55°	1742.6	1720.5	1676.6	1632.7	1614.5
57.5°	1599.7	1581.4	1533.7	1489.8	1475.0
60°	1456.8	1442.4	1391.1	1350.8	1339.9
62.5°	1317.8	1292.1	1255.6	1219.1	1204.4
65°	1175.3	1153.1	1116.6	1083.5	1065.4
67.5°	1028.8	1010.2	977.5	951.9	937.2
70°	893.2	878.5	845.5	819.9	805.5
72.5°	754.2	739.5	721.2	695.6	684.7
75°	614.8	607.8	589.1	567.4	574.8
77.5°	490.5	475.7	468.4	457.5	446.6
80°	366.2	362.3	355.0	344.1	336.7
82.5°	248.9	248.9	245.5	230.7	230.7
85°	149.9	146.4	142.9	131.7	128.2
87.5°	66.0	58.6	51.3	40.4	36.5
90°	1.4	16.8	45.7	42.9	44.3
92.5°	28.9	39.2	40.6	42.0	42.0
95°	68.1	81.1	83.5	83.5	81.1
97.5°	113.3	125.5	130.6	130.6	130.6
100°	165.6	176.3	180.0	180.0	178.6
102.5°	220.6	228.5	233.7	235.1	233.7
105°	280.8	284.5	287.3	289.7	289.7
107.5°	340.5	346.1	346.1	347.0	340.5
110°	398.4	405.8	405.8	405.8	402.0

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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	460.8	468.7	467.3	463.6	460.8
115°	522.4	529.9	527.5	526.1	522.4
117.5°	583.5	593.8	587.2	583.5	579.8
120°	645.1	655.3	645.1	645.1	640.8
122.5°	701.0	714.0	707.5	703.8	701.0
125°	759.8	771.4	767.7	763.5	762.1
127.5°	817.2	831.6	826.5	820.9	817.2
130°	870.8	887.6	885.3	882.5	877.3
132.5°	931.0	944.0	944.9	938.4	934.7
135°	982.8	997.2	1000.0	998.6	994.8
137.5°	1040.6	1052.2	1054.6	1053.6	1048.1
140°	1091.4	1103.1	1109.6	1109.6	1104.5
142.5°	1143.6	1155.3	1159.0	1160.4	1155.3
145°	1193.1	1202.4	1209.9	1211.3	1206.2
147.5°	1237.4	1249.0	1254.7	1256.9	1251.8
150°	1283.1	1291.0	1296.2	1300.3	1296.2
152.5°	1323.6	1331.6	1338.1	1343.3	1338.1
155°	1364.2	1368.0	1372.1	1378.8	1374.5
157.5°	1399.2	1402.1	1404.4	1413.7	1407.2
160°	1430.5	1433.3	1434.7	1442.6	1437.0
162.5°	1459.4	1459.4	1460.8	1469.7	1463.1
165°	1484.1	1482.7	1482.7	1492.1	1485.6
167.5°	1506.5	1502.4	1502.4	1511.6	1505.1
170°	1523.3	1519.6	1518.2	1527.5	1519.6
172.5°	1535.0	1531.2	1529.8	1539.1	1531.2
175°	1544.3	1540.6	1537.7	1547.1	1539.1
177.5°	1549.4	1545.7	1542.9	1550.8	1542.9
180°	1547.1	1547.1	1547.1	1547.1	1547.1

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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	12.49	13.55	13.26	14.35	15.32	12.06	13.12	12.83	13.92	14.89
	3H	14.17	15.12	14.95	15.93	16.93	13.69	14.65	14.48	15.46	16.45
	4H	14.76	15.67	15.57	16.48	17.49	14.29	15.19	15.09	16.01	17.02
	6H	15.17	16.01	15.99	16.83	17.85	14.70	15.53	15.52	16.35	17.38
	8H	15.29	16.08	16.11	16.92	17.95	14.81	15.60	15.64	16.45	17.47
	12H	15.34	16.10	16.17	16.93	17.98	14.86	15.62	15.69	16.45	17.50
4H	2H	12.98	13.88	13.78	14.69	15.70	12.63	13.53	13.44	14.35	15.36
	3H	14.86	15.62	15.68	16.46	17.49	14.47	15.22	15.29	16.07	17.10
	4H	15.59	16.27	16.42	17.12	18.17	15.18	15.87	16.01	16.71	17.77
	6H	16.11	16.71	16.96	17.58	18.64	15.70	16.30	16.55	17.17	18.23
	8H	16.27	16.82	17.12	17.69	18.76	15.86	16.41	16.71	17.28	18.35
	12H	16.35	16.85	17.22	17.74	18.81	15.93	16.43	16.80	17.32	18.39
8H	4H	15.80	16.35	16.65	17.22	18.29	15.44	15.99	16.29	16.86	17.93
	6H	16.44	16.90	17.32	17.81	18.88	16.08	16.54	16.96	17.44	18.52
	8H	16.66	17.07	17.56	17.97	19.06	16.29	16.70	17.19	17.60	18.69
	12H	16.81	17.16	17.70	18.06	19.20	16.42	16.78	17.32	17.67	18.82
12H	4H	15.79	16.29	16.67	17.18	18.26	15.44	15.94	16.32	16.83	17.90
	6H	16.47	16.88	17.36	17.78	18.87	16.12	16.53	17.01	17.43	18.52
	8H	16.72	17.08	17.62	17.98	19.12	16.37	16.73	17.26	17.62	18.76