

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: P919194

Luminaire Tested: DFN2DIP-HX4F0-110D110US935-FLLFLL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P919194
REPORT IS A COMBINATION OF REPORTS P899439 AND P896188
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-HX4F0-110D110US935-FLLFLL
Description: 4 foot, Hexagon Define Geo, with Direct Frosted Lens, Indirect Frosted Lens
Light Source: -
Ballast/Driver: -

Summary

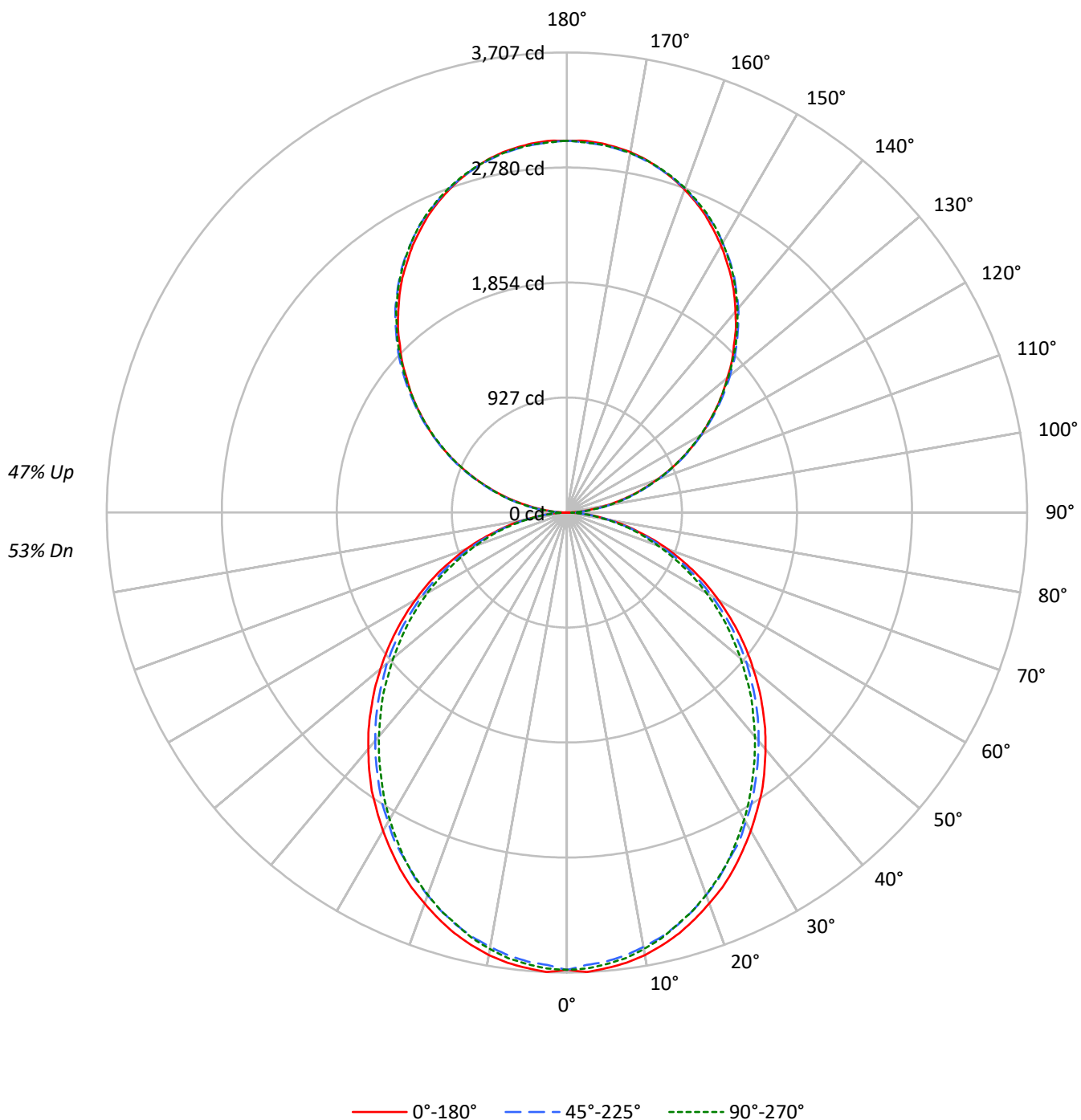
Lumens per Lamp: N/A
Luminaire Lumens: 17758.1 lumens
Efficiency: N/A
Efficacy: 100.0 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.54' x L: 4.09' x H: 0.1')
CIE Type: General Diffuse

Input Watts (W): 177.5
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

TEST NUMBER: P919194

CATALOG NUMBER: DFN2DIP-HX4F0-110D110US935-FLLFLL

Luminous Intensity Polar Plot



TEST NUMBER: P919194

CATALOG NUMBER: DFN2DIP-HX4F0-110D110US935-FLLFL

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
RCR																	
0	108	108	108	108	100	100	100	100	85	85	85		71	71	71		59
1	98	94	90	87	91	87	84	81	74	72	70		63	61	59		52
2	90	82	76	71	83	76	71	66	65	61	58		55	52	50		46
3	82	72	65	59	75	67	61	55	58	53	49		49	45	42		41
4	75	64	56	50	69	60	52	47	51	46	41		43	39	36		36
5	69	57	49	43	63	53	46	40	46	40	36		39	35	31		33
6	63	51	43	37	58	48	40	35	41	36	31		35	31	27		30
7	59	46	38	33	54	43	36	31	37	32	28		32	28	24		27
8	54	42	34	29	50	39	32	27	34	29	24		29	25	22		25
9	51	38	31	26	47	36	29	24	31	26	22		27	23	19		23
10	47	35	28	23	44	33	26	22	29	23	20		25	21	18		21

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	2740	2740	2740
5°	2745	2702	2720
10°	2723	2666	2684
15°	2683	2623	2626
20°	2629	2562	2568
25°	2575	2489	2500
30°	2508	2422	2413
35°	2445	2342	2321
40°	2366	2261	2234
45°	2288	2181	2145
50°	2203	2096	2042
55°	2113	1998	1948
60°	2012	1881	1839
65°	1902	1761	1711
70°	1762	1614	1573
75°	1567	1438	1446
80°	1333	1215	1203
85°	968	828	800

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°
Vertical Angle: 45°
Luminance: 2288 cd/sqm

TEST NUMBER: P919194

CATALOG NUMBER: DFN2DIP-HX4F0-110D110US935-FLLFLL

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	346.9	2.0
10°-20°	975.9	5.5
20°-30°	1434.2	8.1
30°-40°	1665.7	9.4
40°-50°	1663.7	9.4
50°-60°	1450.7	8.2
60°-70°	1072.4	6.0
70°-80°	606.7	3.4
80°-90°	168.6	0.9
90°-100°	185.3	1.0
100°-110°	588.9	3.3
110°-120°	1007.8	5.7
120°-130°	1325.4	7.5
130°-140°	1487.7	8.4
140°-150°	1458.9	8.2
150°-160°	1223.8	6.9
160°-170°	811.6	4.6
170°-180°	283.7	1.6
0°-30°	2757.0	15.5
0°-40°	4422.7	24.9
0°-60°	7537.0	42.4
0°-90°	9384.8	52.8
90°-120°	1782.1	10.0
90°-150°	6054.2	34.1
90°-180°	8373.0	47.2
0°-180°	17758.1	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	3685	3685	3685	3685	3685	
5°	3685	3671	3632	3660	3654	350
15°	3508	3487	3441	3455	3437	988
25°	3175	3147	3087	3094	3087	1461
35°	2739	2704	2647	2626	2608	1711
45°	2229	2204	2151	2112	2098	1720
55°	1687	1666	1623	1580	1563	1508
65°	1138	1116	1081	1049	1031	1125
75°	595	588	570	549	556	635
85°	145	142	138	127	124	162
90°	3	32	88	83	86	17
95°	132	157	162	162	157	147
105°	544	551	556	561	561	574
115°	1011	1026	1021	1019	1011	1000
125°	1471	1494	1486	1478	1476	1315
135°	1903	1931	1936	1933	1926	1471
145°	2310	2328	2342	2345	2335	1443
155°	2641	2648	2657	2669	2661	1216
165°	2873	2871	2871	2889	2876	811
175°	2990	2983	2977	2995	2980	284
180°	2995	2995	2995	2995	2995	

TEST NUMBER: P919194

CATALOG NUMBER: DFN2DIP-HX4F0-110D110US935-FLLFLL

CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	3685.2	3685.2	3685.2	3685.2	3685.2
2.5°	3706.6	3688.9	3649.9	3685.2	3678.4
5°	3685.2	3671.3	3632.2	3660.4	3653.6
7.5°	3660.4	3639.4	3600.3	3628.8	3621.7
10°	3621.7	3596.8	3554.4	3582.5	3572.0
12.5°	3568.3	3547.2	3504.8	3522.4	3515.3
15°	3508.1	3487.0	3440.8	3455.1	3437.4
17.5°	3433.7	3412.7	3366.4	3384.1	3366.4
20°	3352.1	3331.0	3281.4	3291.9	3278.1
22.5°	3270.9	3238.9	3192.7	3192.7	3185.5
25°	3175.0	3146.9	3086.7	3093.5	3086.7
27.5°	3068.6	3043.8	2997.9	2987.4	2969.8
30°	2962.6	2934.0	2881.0	2870.5	2856.2
32.5°	2849.0	2828.0	2771.2	2749.8	2735.5
35°	2739.3	2704.0	2647.1	2625.7	2608.0
37.5°	2615.2	2583.3	2526.5	2501.6	2484.0
40°	2487.8	2459.2	2402.4	2370.8	2356.6
42.5°	2363.7	2335.1	2278.7	2243.0	2222.0
45°	2229.1	2204.2	2150.9	2112.2	2097.9
47.5°	2097.9	2073.1	2016.3	1977.2	1956.1
50°	1959.5	1941.9	1892.2	1842.6	1825.0
52.5°	1825.0	1800.1	1754.3	1715.1	1690.3
55°	1687.0	1665.5	1623.1	1580.5	1562.9
57.5°	1548.6	1530.9	1484.7	1442.2	1427.9
60°	1410.2	1396.4	1346.7	1307.6	1297.1
62.5°	1275.7	1250.9	1215.5	1180.2	1165.9
65°	1137.6	1116.2	1080.9	1049.0	1031.3
67.5°	995.9	977.9	946.3	921.5	907.2
70°	864.7	850.4	818.5	793.7	779.7
72.5°	730.1	715.8	698.2	673.4	662.8
75°	595.1	588.4	570.3	549.3	556.5
77.5°	474.8	460.5	453.4	442.9	432.4
80°	354.6	350.8	343.6	333.1	326.0
82.5°	241.0	241.0	237.6	223.3	223.3
85°	145.2	141.7	138.4	127.4	124.1
87.5°	63.9	56.7	49.6	39.1	35.3
90°	2.7	32.5	88.5	83.1	85.8
92.5°	56.0	75.9	78.5	81.3	81.3
95°	131.8	157.1	161.6	161.6	157.1
97.5°	219.5	242.9	252.9	252.9	252.9
100°	320.5	341.3	348.5	348.5	345.9
102.5°	427.1	442.5	452.5	455.1	452.5
105°	543.6	550.9	556.3	560.8	560.8
107.5°	659.2	670.0	670.0	671.8	659.2
110°	771.2	785.7	785.7	785.7	778.4



TEST NUMBER: P919194

CATALOG NUMBER: DFN2DIP-HX4F0-110D110US935-FLLFLL

CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	892.2	907.5	904.8	897.6	892.2
115°	1011.4	1025.8	1021.3	1018.6	1011.4
117.5°	1129.7	1149.5	1136.9	1129.7	1122.5
120°	1248.9	1268.8	1248.9	1248.9	1240.8
122.5°	1357.3	1382.5	1369.8	1362.6	1357.3
125°	1471.0	1493.6	1486.3	1478.2	1475.5
127.5°	1582.1	1610.1	1600.2	1589.3	1582.1
130°	1685.9	1718.5	1713.9	1708.5	1698.6
132.5°	1802.4	1827.7	1829.5	1816.9	1809.6
135°	1902.6	1930.6	1936.0	1933.4	1926.1
137.5°	2014.6	2037.2	2041.7	2039.9	2029.1
140°	2113.1	2135.6	2148.3	2148.3	2138.4
142.5°	2214.2	2236.8	2244.0	2246.7	2236.8
145°	2309.9	2328.0	2342.4	2345.1	2335.2
147.5°	2395.7	2418.3	2429.1	2433.6	2423.7
150°	2484.2	2499.6	2509.5	2517.6	2509.5
152.5°	2562.8	2578.1	2590.7	2600.7	2590.7
155°	2641.4	2648.5	2656.7	2669.4	2661.2
157.5°	2709.0	2714.5	2718.9	2737.0	2724.4
160°	2769.6	2775.0	2777.7	2793.1	2782.2
162.5°	2825.5	2825.5	2828.3	2845.4	2832.8
165°	2873.4	2870.7	2870.7	2888.7	2876.1
167.5°	2916.7	2908.6	2908.6	2926.7	2914.0
170°	2949.3	2942.0	2939.4	2957.4	2942.0
172.5°	2971.8	2964.6	2961.9	2980.0	2964.6
175°	2989.9	2982.7	2977.2	2995.3	2980.0
177.5°	2999.8	2992.6	2987.1	3002.6	2987.1
180°	2995.3	2995.3	2995.3	2995.3	2995.3

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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	11.03	11.92	11.97	12.87	14.10	10.60	11.49	11.53	12.44	13.67
	3H	12.70	13.49	13.64	14.45	15.70	12.22	13.02	13.17	13.98	15.23
	4H	13.29	14.04	14.24	15.00	16.26	12.81	13.57	13.77	14.53	15.79
	6H	13.69	14.38	14.66	15.35	16.63	13.21	13.91	14.18	14.88	16.15
	8H	13.79	14.45	14.77	15.44	16.71	13.32	13.98	14.29	14.97	16.24
	12H	13.84	14.47	14.82	15.45	16.75	13.36	13.99	14.34	14.97	16.27
4H	2H	11.50	12.25	12.46	13.22	14.48	11.15	11.91	12.12	12.87	14.13
	3H	13.37	14.00	14.34	14.99	16.27	12.98	13.60	13.95	14.60	15.87
	4H	14.08	14.66	15.07	15.65	16.95	13.68	14.25	14.66	15.24	16.54
	6H	14.60	15.10	15.60	16.11	17.41	14.19	14.69	15.19	15.70	17.00
	8H	14.75	15.22	15.75	16.22	17.53	14.34	14.80	15.34	15.81	17.12
	12H	14.83	15.25	15.84	16.27	17.58	14.41	14.82	15.42	15.84	17.16
8H	4H	14.28	14.75	15.28	15.75	17.06	13.92	14.39	14.92	15.39	16.70
	6H	14.92	15.30	15.94	16.35	17.66	14.55	14.94	15.58	15.98	17.29
	8H	15.14	15.48	16.17	16.51	17.84	14.77	15.11	15.80	16.14	17.47
	12H	15.27	15.57	16.31	16.60	17.97	14.89	15.19	15.92	16.21	17.59
12H	4H	14.27	14.69	15.29	15.71	17.03	13.92	14.34	14.93	15.36	16.67
	6H	14.95	15.29	15.98	16.32	17.65	14.60	14.93	15.63	15.97	17.30
	8H	15.19	15.49	16.23	16.52	17.89	14.83	15.13	15.87	16.16	17.53

END OF REPORT

FIELD PERFORMANCE MAY DIFFER FROM LABORATORY PERFORMANCE

8 of 8