

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: P916458

Luminaire Tested: DFN2DIP-HX4F0-110D070US930-FLLFLL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P916458
REPORT IS A COMBINATION OF REPORTS P899367 AND P896188
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-HX4F0-110D070US930-FLLFLL
Description: 4 foot, Hexagon Define Geo, with Direct Frosted Lens, Indirect Frosted Lens
Light Source: -
Ballast/Driver: -

Summary

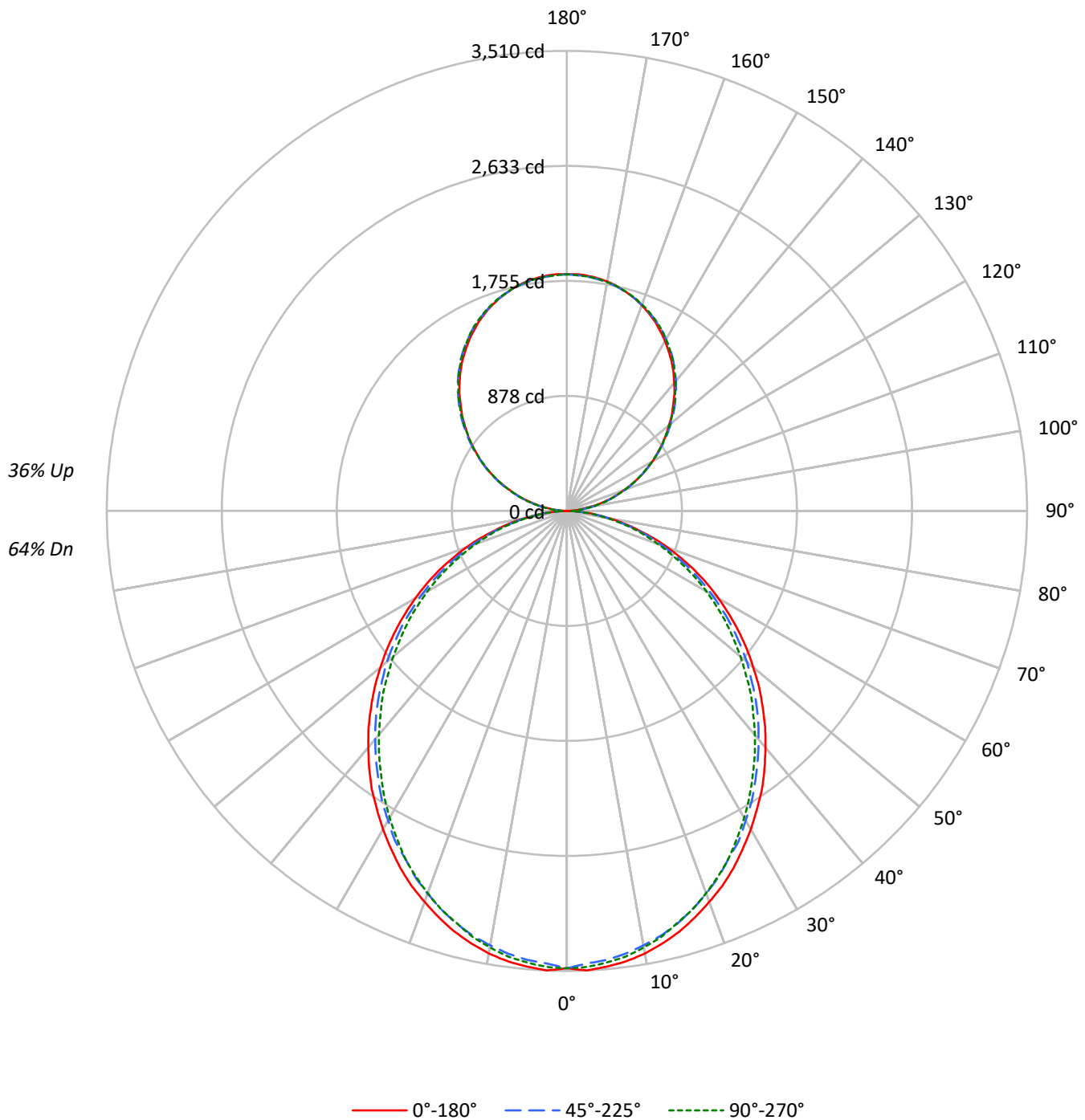
Lumens per Lamp: N/A
Luminaire Lumens: 13929.4 lumens
Efficiency: N/A
Efficacy: 91.8 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.54' x L: 4.09' x H: 0.1')
CIE Type: Semi-Direct

Input Watts (W): 151.8
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: P916458

CATALOG NUMBER: DFN2DIP-HX4F0-110D070US930-FLLFLL

Luminous Intensity Polar Plot



TEST NUMBER: P916458

CATALOG NUMBER: DFN2DIP-HX4F0-110D070US930-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	30	10
RCR																	
0	110	110	110	110	104	104	104	104	91	91	91	79	79	79	69	69	69
1	101	96	92	89	95	91	87	84	80	77	75	70	68	66	61	59	58
2	92	84	78	73	86	79	74	69	70	66	62	61	58	55	54	51	49
3	84	74	67	61	78	70	63	58	62	57	52	54	50	47	47	44	42
4	77	66	58	51	72	62	55	49	55	49	45	48	44	40	42	39	36
5	71	59	50	44	66	55	48	42	49	43	39	44	39	35	38	34	31
6	65	53	44	38	61	50	42	37	44	38	34	39	34	31	35	31	28
7	60	48	39	34	56	45	38	32	40	34	30	36	31	27	32	28	25
8	56	43	35	30	52	41	34	29	37	31	27	33	28	24	29	25	22
9	52	40	32	27	49	38	31	26	34	28	24	30	25	22	27	23	20
10	49	36	29	24	46	35	28	23	31	26	22	28	23	20	25	21	18

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	2595	2595	2595
5°	2599	2559	2576
10°	2578	2525	2541
15°	2541	2483	2487
20°	2490	2426	2431
25°	2439	2357	2367
30°	2375	2293	2285
35°	2315	2217	2198
40°	2241	2141	2116
45°	2167	2065	2032
50°	2086	1985	1934
55°	2001	1892	1844
60°	1905	1781	1741
65°	1801	1668	1620
70°	1668	1528	1490
75°	1483	1362	1369
80°	1262	1150	1139
85°	917	784	758

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 2167 cd/sqm

TEST NUMBER: P916458

CATALOG NUMBER: DFN2DIP-HX4F0-110D070US930-FLLFLL

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	328.4	2.4
10°-20°	924.1	6.6
20°-30°	1358.1	9.7
30°-40°	1577.3	11.3
40°-50°	1575.4	11.3
50°-60°	1373.7	9.9
60°-70°	1015.5	7.3
70°-80°	574.5	4.1
80°-90°	156.8	1.1
90°-100°	111.7	0.8
100°-110°	354.9	2.5
110°-120°	607.3	4.4
120°-130°	798.7	5.7
130°-140°	896.5	6.4
140°-150°	879.1	6.3
150°-160°	737.5	5.3
160°-170°	489.1	3.5
170°-180°	170.9	1.2
0°-30°	2610.6	18.7
0°-40°	4187.9	30.1
0°-60°	7137.0	51.2
0°-90°	8883.7	63.8
90°-120°	1073.9	7.7
90°-150°	3648.2	26.2
90°-180°	5046.0	36.2
0°-180°	13929.4	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	3490	3490	3490	3490	3490	
5°	3490	3476	3439	3466	3460	331
15°	3322	3302	3258	3272	3255	936
25°	3006	2980	2923	2929	2923	1383
35°	2594	2560	2507	2486	2470	1620
45°	2111	2087	2037	2000	1987	1629
55°	1597	1577	1537	1497	1480	1428
65°	1077	1057	1024	993	977	1065
75°	564	557	540	520	527	602
85°	138	134	131	121	118	153
90°	2	20	53	50	52	13
95°	79	95	97	97	95	88
105°	328	332	335	338	338	346
115°	609	618	616	614	609	603
125°	886	900	896	891	889	792
135°	1147	1163	1167	1165	1161	886
145°	1392	1403	1412	1413	1407	870
155°	1592	1596	1601	1608	1604	733
165°	1731	1730	1730	1741	1733	488
175°	1802	1797	1794	1805	1796	171
180°	1805	1805	1805	1805	1805	

TEST NUMBER: P916458

CATALOG NUMBER: DFN2DIP-HX4F0-110D070US930-FLLFLL

CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	3489.6	3489.6	3489.6	3489.6	3489.6
2.5°	3509.9	3493.1	3456.1	3489.6	3483.2
5°	3489.6	3476.4	3439.4	3466.1	3459.7
7.5°	3466.1	3446.2	3409.2	3436.2	3429.5
10°	3429.5	3405.9	3365.7	3392.4	3382.4
12.5°	3378.9	3358.9	3318.8	3335.5	3328.7
15°	3321.9	3302.0	3258.2	3271.7	3255.0
17.5°	3251.4	3231.5	3187.7	3204.4	3187.7
20°	3174.2	3154.2	3107.3	3117.2	3104.1
22.5°	3097.3	3067.0	3023.2	3023.2	3016.4
25°	3006.5	2979.8	2922.8	2929.3	2922.8
27.5°	2905.7	2882.2	2838.8	2828.8	2812.1
30°	2805.4	2778.3	2728.1	2718.1	2704.6
32.5°	2697.8	2677.9	2624.1	2603.8	2590.3
35°	2593.9	2560.4	2506.6	2486.3	2469.6
37.5°	2476.4	2446.1	2392.4	2368.8	2352.1
40°	2355.7	2328.7	2274.9	2245.0	2231.5
42.5°	2238.2	2211.2	2157.8	2123.9	2104.0
45°	2110.8	2087.2	2036.7	2000.1	1986.6
47.5°	1986.6	1963.1	1909.3	1872.3	1852.3
50°	1855.5	1838.8	1791.8	1744.8	1728.1
52.5°	1728.1	1704.5	1661.2	1624.1	1600.6
55°	1597.4	1577.1	1536.9	1496.6	1479.9
57.5°	1466.4	1449.7	1405.9	1365.6	1352.1
60°	1335.4	1322.3	1275.2	1238.2	1228.2
62.5°	1207.9	1184.5	1151.0	1117.5	1104.0
65°	1077.3	1057.0	1023.5	993.3	976.6
67.5°	943.1	926.0	896.1	872.6	859.1
70°	818.8	805.3	775.0	751.5	738.3
72.5°	691.4	677.8	661.1	637.6	627.6
75°	563.5	557.2	540.1	520.2	526.9
77.5°	449.6	436.1	429.3	419.4	409.4
80°	335.7	332.2	325.4	315.4	308.7
82.5°	228.2	228.2	225.0	211.5	211.5
85°	137.5	134.2	131.0	120.7	117.5
87.5°	60.5	53.7	47.0	37.0	33.4
90°	1.6	19.6	53.3	50.1	51.7
92.5°	33.8	45.7	47.4	49.0	49.0
95°	79.4	94.7	97.4	97.4	94.7
97.5°	132.2	146.3	152.4	152.4	152.4
100°	193.1	205.7	210.0	210.0	208.4
102.5°	257.4	266.6	272.6	274.3	272.6
105°	327.6	331.9	335.2	337.9	337.9
107.5°	397.2	403.7	403.7	404.9	397.2
110°	464.7	473.4	473.4	473.4	469.0

TEST NUMBER: P916458

CATALOG NUMBER: DFN2DIP-HX4F0-110D070US930-FLLFL

CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	537.6	546.9	545.3	540.9	537.6
115°	609.4	618.2	615.5	613.8	609.4
117.5°	680.7	692.7	685.1	680.7	676.4
120°	752.5	764.5	752.5	752.5	747.6
122.5°	817.8	833.1	825.5	821.1	817.8
125°	886.4	900.0	895.7	890.8	889.2
127.5°	953.3	970.2	964.3	957.7	953.3
130°	1015.9	1035.5	1032.8	1029.6	1023.5
132.5°	1086.1	1101.4	1102.4	1094.9	1090.5
135°	1146.6	1163.3	1166.7	1165.0	1160.7
137.5°	1214.0	1227.6	1230.3	1229.2	1222.7
140°	1273.3	1286.9	1294.5	1294.5	1288.6
142.5°	1334.2	1347.9	1352.2	1353.8	1347.9
145°	1392.0	1402.8	1411.5	1413.2	1407.2
147.5°	1443.6	1457.3	1463.8	1466.5	1460.5
150°	1497.0	1506.2	1512.2	1517.1	1512.2
152.5°	1544.3	1553.6	1561.1	1567.2	1561.1
155°	1591.6	1595.9	1600.9	1608.5	1603.6
157.5°	1632.5	1635.7	1638.4	1649.3	1641.7
160°	1668.9	1672.2	1673.8	1683.0	1676.5
162.5°	1702.7	1702.7	1704.3	1714.6	1707.0
165°	1731.4	1729.8	1729.8	1740.7	1733.1
167.5°	1757.6	1752.7	1752.7	1763.6	1756.0
170°	1777.2	1772.9	1771.2	1782.1	1772.9
172.5°	1790.8	1786.4	1784.8	1795.7	1786.4
175°	1801.6	1797.3	1794.1	1804.9	1795.7
177.5°	1807.7	1803.3	1800.0	1809.3	1800.0
180°	1804.9	1804.9	1804.9	1804.9	1804.9

TEST NUMBER: P916458

CATALOG NUMBER: DFN2DIP-HX4F0-110D070US930-FLLFLL

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	11.77	12.77	12.60	13.62	14.68	11.33	12.34	12.16	13.19	14.25
	3H	13.44	14.34	14.28	15.20	16.29	12.97	13.86	13.81	14.72	15.81
	4H	14.03	14.88	14.89	15.75	16.85	13.56	14.41	14.42	15.28	16.37
	6H	14.44	15.22	15.31	16.10	17.21	13.96	14.75	14.84	15.62	16.73
	8H	14.55	15.30	15.43	16.19	17.30	14.07	14.82	14.95	15.71	16.82
	12H	14.60	15.31	15.49	16.20	17.34	14.12	14.83	15.01	15.72	16.86
4H	2H	12.25	13.09	13.11	13.96	15.06	11.90	12.75	12.76	13.62	14.72
	3H	14.13	14.83	15.00	15.73	16.85	13.73	14.44	14.61	15.34	16.45
	4H	14.85	15.49	15.73	16.39	17.53	14.44	15.09	15.33	15.98	17.12
	6H	15.37	15.93	16.27	16.85	17.99	14.96	15.52	15.86	16.44	17.58
	8H	15.52	16.05	16.43	16.96	18.12	15.11	15.63	16.02	16.55	17.70
	12H	15.60	16.07	16.53	17.01	18.17	15.18	15.65	16.11	16.59	17.75
8H	4H	15.05	15.58	15.96	16.49	17.65	14.69	15.22	15.60	16.13	17.29
	6H	15.69	16.13	16.62	17.08	18.24	15.33	15.76	16.26	16.72	17.87
	8H	15.92	16.30	16.86	17.25	18.42	15.55	15.93	16.49	16.88	18.05
	12H	16.06	16.39	17.00	17.33	18.56	15.67	16.01	16.61	16.95	18.17
12H	4H	15.05	15.52	15.97	16.45	17.61	14.70	15.17	15.62	16.10	17.26
	6H	15.72	16.11	16.67	17.06	18.23	15.37	15.76	16.31	16.70	17.88
	8H	15.97	16.31	16.92	17.25	18.48	15.62	15.95	16.56	16.90	18.12