

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: P916456

Luminaire Tested: DFN2DIP-HX4F0-110D060US930-FLLFLL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P916456
REPORT IS A COMBINATION OF REPORTS P899349 AND P896188
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-HX4F0-110D060US930-FLLFLL
Description: 4 foot, Hexagon Define Geo, with Direct Frosted Lens, Indirect Frosted Lens
Light Source: -
Ballast/Driver: -

Summary

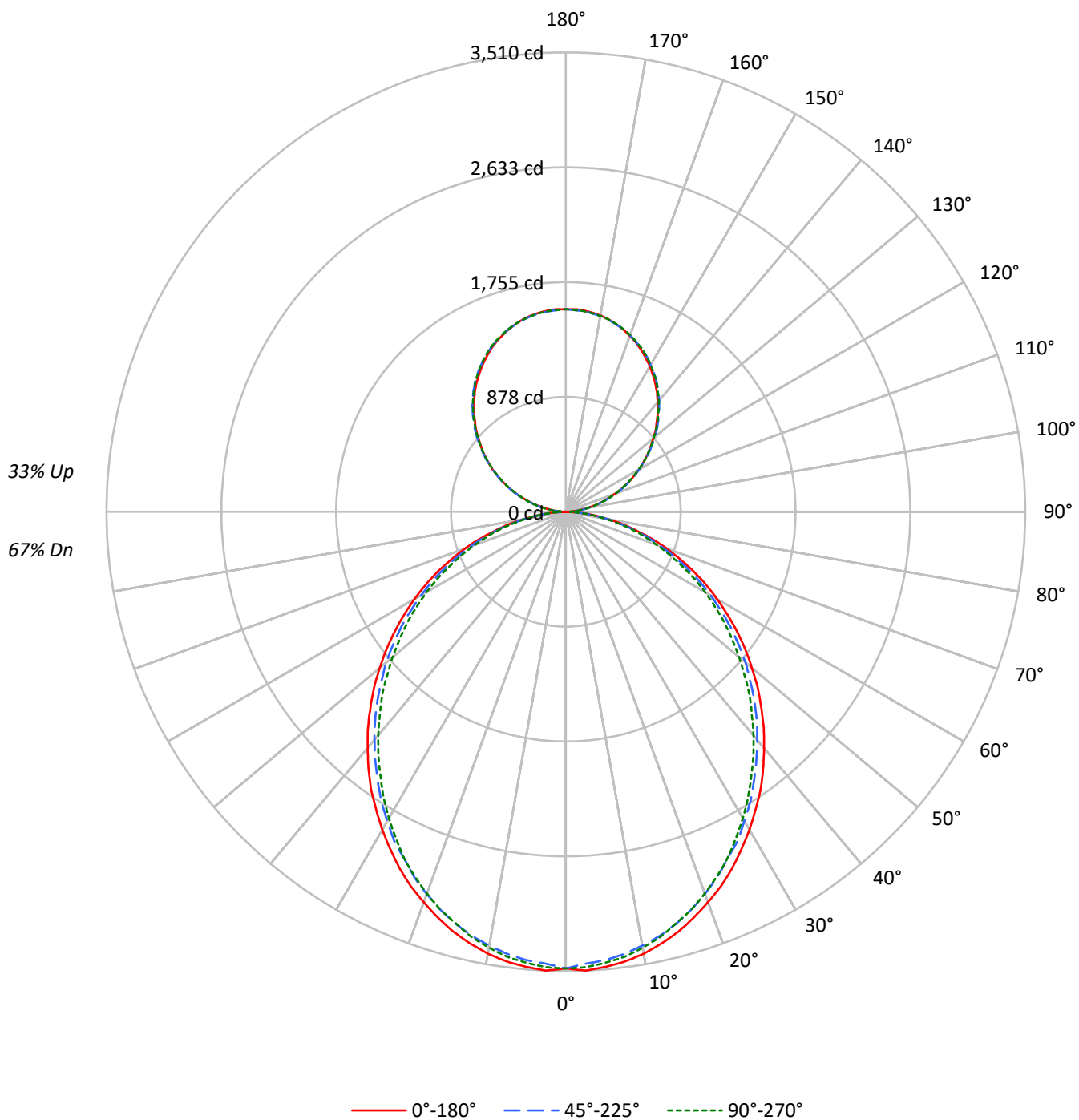
Lumens per Lamp: N/A
Luminaire Lumens: 13207.8 lumens
Efficiency: N/A
Efficacy: 90.3 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.54' x L: 4.09' x H: 0.1')
CIE Type: Semi-Direct

Input Watts (W): 146.3
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
RW	70	50	30	10	70	50	30	10	50	30	10		50	30	10		50
RCR																	
0	111	111	111	111	105	105	105	105	93	93	93		82	82	82		72
1	102	97	93	90	96	92	88	85	82	79	76		72	70	68		64
2	93	85	79	73	87	80	75	70	72	67	63		63	60	57		56
3	85	75	67	61	79	71	64	58	63	58	53		56	52	48		50
4	77	66	58	52	73	63	55	50	56	50	46		50	45	42		44
5	71	59	51	45	67	56	49	43	50	44	39		45	40	36		40
6	66	53	45	39	62	51	43	37	45	39	35		41	36	32		36
7	61	48	40	34	57	46	38	33	41	35	31		37	32	28		33
8	56	44	36	30	53	42	34	29	38	32	27		34	29	25		31
9	53	40	32	27	50	38	31	26	35	29	24		31	26	23		28
10	49	37	29	24	46	35	28	24	32	26	22		29	24	21		26

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

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	328.4	2.5
10°-20°	924.1	7.0
20°-30°	1358.1	10.3
30°-40°	1577.3	11.9
40°-50°	1575.4	11.9
50°-60°	1373.7	10.4
60°-70°	1015.5	7.7
70°-80°	574.5	4.3
80°-90°	156.0	1.2
90°-100°	95.7	0.7
100°-110°	304.2	2.3
110°-120°	520.6	3.9
120°-130°	684.6	5.2
130°-140°	768.4	5.8
140°-150°	753.5	5.7
150°-160°	632.1	4.8
160°-170°	419.2	3.2
170°-180°	146.5	1.1
0°-30°	2610.6	19.8
0°-40°	4187.9	31.7
0°-60°	7137.0	54.0
0°-90°	8883.0	67.3
90°-120°	920.5	7.0
90°-150°	3127.0	23.7
90°-180°	4325.0	32.7
0°-180°	13207.8	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°	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°	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°	1.4	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	12.04	13.08	12.84	13.90	14.90	11.61	12.65	12.40	13.47	14.47
	3H	13.72	14.65	14.52	15.48	16.51	13.24	14.18	14.05	15.00	16.03
	4H	14.31	15.20	15.14	16.03	17.07	13.84	14.72	14.66	15.56	16.60
	6H	14.72	15.54	15.56	16.38	17.43	14.25	15.06	15.08	15.90	16.96
	8H	14.83	15.61	15.68	16.47	17.52	14.36	15.13	15.20	15.99	17.05
	12H	14.89	15.63	15.74	16.48	17.56	14.41	15.15	15.26	16.00	17.08
4H	2H	12.53	13.41	13.35	14.24	15.28	12.18	13.06	13.01	13.90	14.94
	3H	14.41	15.15	15.25	16.01	17.07	14.02	14.75	14.86	15.62	16.68
	4H	15.13	15.80	15.98	16.67	17.75	14.73	15.40	15.58	16.26	17.35
	6H	15.66	16.24	16.53	17.13	18.22	15.25	15.83	16.12	16.72	17.81
	8H	15.81	16.36	16.68	17.24	18.34	15.40	15.94	16.27	16.83	17.93
	12H	15.89	16.38	16.79	17.29	18.39	15.47	15.96	16.36	16.86	17.97
8H	4H	15.34	15.89	16.21	16.77	17.87	14.98	15.53	15.85	16.41	17.51
	6H	15.98	16.43	16.88	17.36	18.46	15.62	16.07	16.52	17.00	18.10
	8H	16.21	16.61	17.12	17.52	18.64	15.84	16.24	16.75	17.15	18.27
	12H	16.35	16.70	17.26	17.61	18.78	15.96	16.31	16.88	17.22	18.39
12H	4H	15.34	15.83	16.23	16.73	17.84	14.99	15.47	15.88	16.38	17.48
	6H	16.01	16.41	16.92	17.33	18.45	15.66	16.06	16.57	16.98	18.10
	8H	16.27	16.62	17.18	17.53	18.70	15.91	16.26	16.82	17.17	18.34