

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: P919184

Luminaire Tested: DFN2DIP-HX4F0-110D060US935-FLLFLL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P919184
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-HX4F0-110D060US935-FLLFL
Description: 4 foot, Hexagon Define Geo, with Direct Frosted Lens, Indirect Frosted Lens
Light Source: -
Ballast/Driver: -

Summary

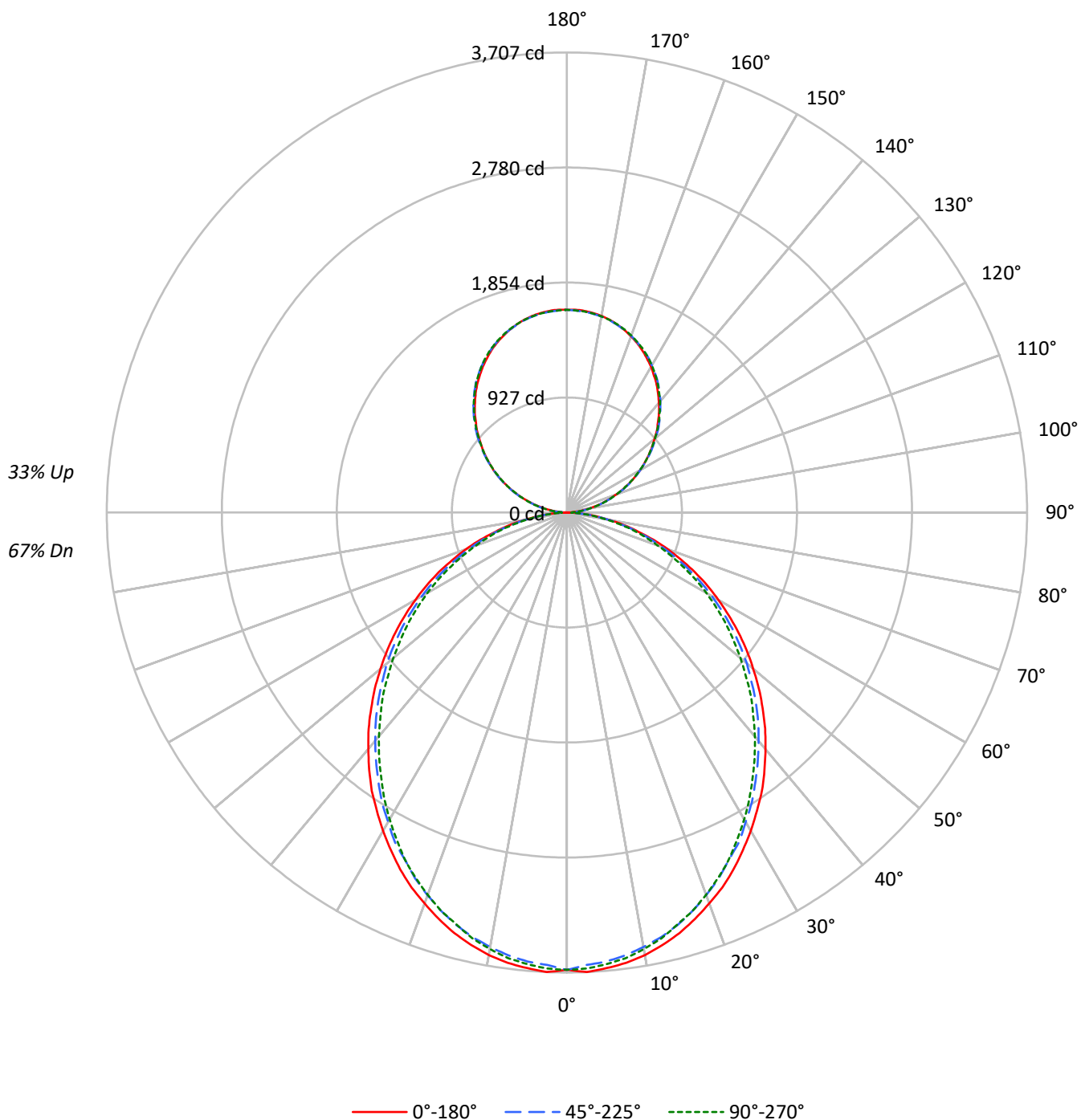
Lumens per Lamp: N/A
Luminaire Lumens: 13948.2 lumens
Efficiency: N/A
Efficacy: 95.3 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.54' x L: 4.09' x H: 0.1')
CIE Type: Semi-Direct

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°	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

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	346.9	2.5
10°-20°	975.9	7.0
20°-30°	1434.2	10.3
30°-40°	1665.7	11.9
40°-50°	1663.7	11.9
50°-60°	1450.7	10.4
60°-70°	1072.4	7.7
70°-80°	606.7	4.3
80°-90°	164.8	1.2
90°-100°	101.1	0.7
100°-110°	321.2	2.3
110°-120°	549.7	3.9
120°-130°	723.0	5.2
130°-140°	811.5	5.8
140°-150°	795.8	5.7
150°-160°	667.5	4.8
160°-170°	442.7	3.2
170°-180°	154.7	1.1
0°-30°	2757.0	19.8
0°-40°	4422.7	31.7
0°-60°	7537.0	54.0
0°-90°	9380.9	67.3
90°-120°	972.0	7.0
90°-150°	3302.3	23.7
90°-180°	4567.0	32.7
0°-180°	13948.2	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°	2	18	48	45	47	13
95°	72	86	88	88	86	80
105°	296	300	303	306	306	313
115°	552	560	557	556	552	546
125°	802	815	811	806	805	717
135°	1038	1053	1056	1055	1051	802
145°	1260	1270	1278	1279	1274	787
155°	1441	1445	1449	1456	1452	663
165°	1567	1566	1566	1576	1569	442
175°	1631	1627	1624	1634	1625	155
180°	1634	1634	1634	1634	1634	

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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°	1.5	17.7	48.3	45.3	46.8
92.5°	30.6	41.4	42.9	44.3	44.3
95°	71.9	85.7	88.2	88.2	85.7
97.5°	119.7	132.5	137.9	137.9	137.9
100°	174.9	186.1	190.1	190.1	188.6
102.5°	233.0	241.3	246.8	248.2	246.8
105°	296.5	300.5	303.4	305.9	305.9
107.5°	359.6	365.5	365.5	366.4	359.6
110°	420.7	428.5	428.5	428.5	424.6

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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	486.6	495.0	493.5	489.6	486.6
115°	551.6	559.6	557.1	555.6	551.6
117.5°	616.2	627.1	620.1	616.2	612.3
120°	681.2	692.1	681.2	681.2	676.7
122.5°	740.3	754.1	747.2	743.3	740.3
125°	802.4	814.7	810.7	806.3	804.9
127.5°	863.0	878.2	872.8	866.9	863.0
130°	919.6	937.4	934.9	931.9	926.5
132.5°	983.2	996.9	997.9	991.0	987.0
135°	1037.8	1053.1	1056.0	1054.6	1050.6
137.5°	1098.9	1111.2	1113.7	1112.7	1106.8
140°	1152.6	1164.9	1171.8	1171.8	1166.4
142.5°	1207.7	1220.0	1224.0	1225.5	1220.0
145°	1260.0	1269.8	1277.7	1279.2	1273.8
147.5°	1306.7	1319.0	1325.0	1327.4	1322.0
150°	1355.0	1363.4	1368.8	1373.2	1368.8
152.5°	1397.8	1406.3	1413.2	1418.6	1413.2
155°	1440.7	1444.7	1449.1	1456.0	1451.6
157.5°	1477.6	1480.7	1483.1	1493.0	1486.1
160°	1510.7	1513.6	1515.1	1523.4	1517.6
162.5°	1541.2	1541.2	1542.6	1552.0	1545.1
165°	1567.3	1565.8	1565.8	1575.7	1568.8
167.5°	1591.0	1586.6	1586.6	1596.4	1589.5
170°	1608.7	1604.7	1603.3	1613.1	1604.7
172.5°	1621.0	1617.0	1615.6	1625.4	1617.0
175°	1630.8	1626.9	1623.9	1633.8	1625.4
177.5°	1636.2	1632.4	1629.4	1637.7	1629.4
180°	1633.8	1633.8	1633.8	1633.8	1633.8

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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	12.23	13.27	13.02	14.09	15.09	11.80	12.84	12.59	13.66	14.66
	3H	13.91	14.84	14.71	15.67	16.70	13.43	14.37	14.24	15.19	16.22
	4H	14.50	15.39	15.33	16.22	17.26	14.03	14.91	14.85	15.75	16.79
	6H	14.91	15.73	15.75	16.57	17.62	14.44	15.25	15.27	16.09	17.15
	8H	15.02	15.80	15.87	16.66	17.71	14.55	15.32	15.39	16.18	17.24
	12H	15.08	15.82	15.93	16.67	17.75	14.60	15.34	15.45	16.19	17.27
4H	2H	12.72	13.60	13.54	14.43	15.47	12.37	13.25	13.20	14.09	15.13
	3H	14.60	15.34	15.44	16.20	17.26	14.21	14.94	15.05	15.81	16.87
	4H	15.32	15.99	16.17	16.86	17.94	14.92	15.59	15.77	16.45	17.54
	6H	15.85	16.43	16.72	17.32	18.40	15.44	16.02	16.31	16.91	18.00
	8H	16.00	16.54	16.87	17.43	18.53	15.59	16.13	16.46	17.02	18.12
	12H	16.08	16.57	16.98	17.48	18.58	15.66	16.15	16.55	17.05	18.16
8H	4H	15.53	16.08	16.40	16.96	18.06	15.17	15.72	16.04	16.60	17.70
	6H	16.17	16.62	17.07	17.55	18.65	15.81	16.26	16.71	17.19	18.29
	8H	16.40	16.79	17.31	17.71	18.83	16.03	16.43	16.94	17.34	18.46
	12H	16.54	16.89	17.45	17.80	18.97	16.15	16.50	17.06	17.41	18.58
12H	4H	15.53	16.02	16.42	16.92	18.03	15.17	15.66	16.07	16.57	17.67
	6H	16.20	16.60	17.11	17.52	18.64	15.85	16.25	16.76	17.17	18.29
	8H	16.46	16.81	17.37	17.72	18.89	16.10	16.45	17.01	17.36	18.53