

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: P928632

Luminaire Tested: DFN2DIP-HX4F0-070D120US930-FLLONL

Issue Date: 12/12/2024

Test Information

Test Method: LM-79-2019
Report Number: P928632
REPORT IS A COMBINATION OF REPORTS P900969 AND P896187
Test Lab: INNOVATION CENTER
Issue Date: 12/12/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-HX4F0-070D120US930-FLLONL
Description: 4 foot, Hexagon Define Geo, with Direct Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

Summary

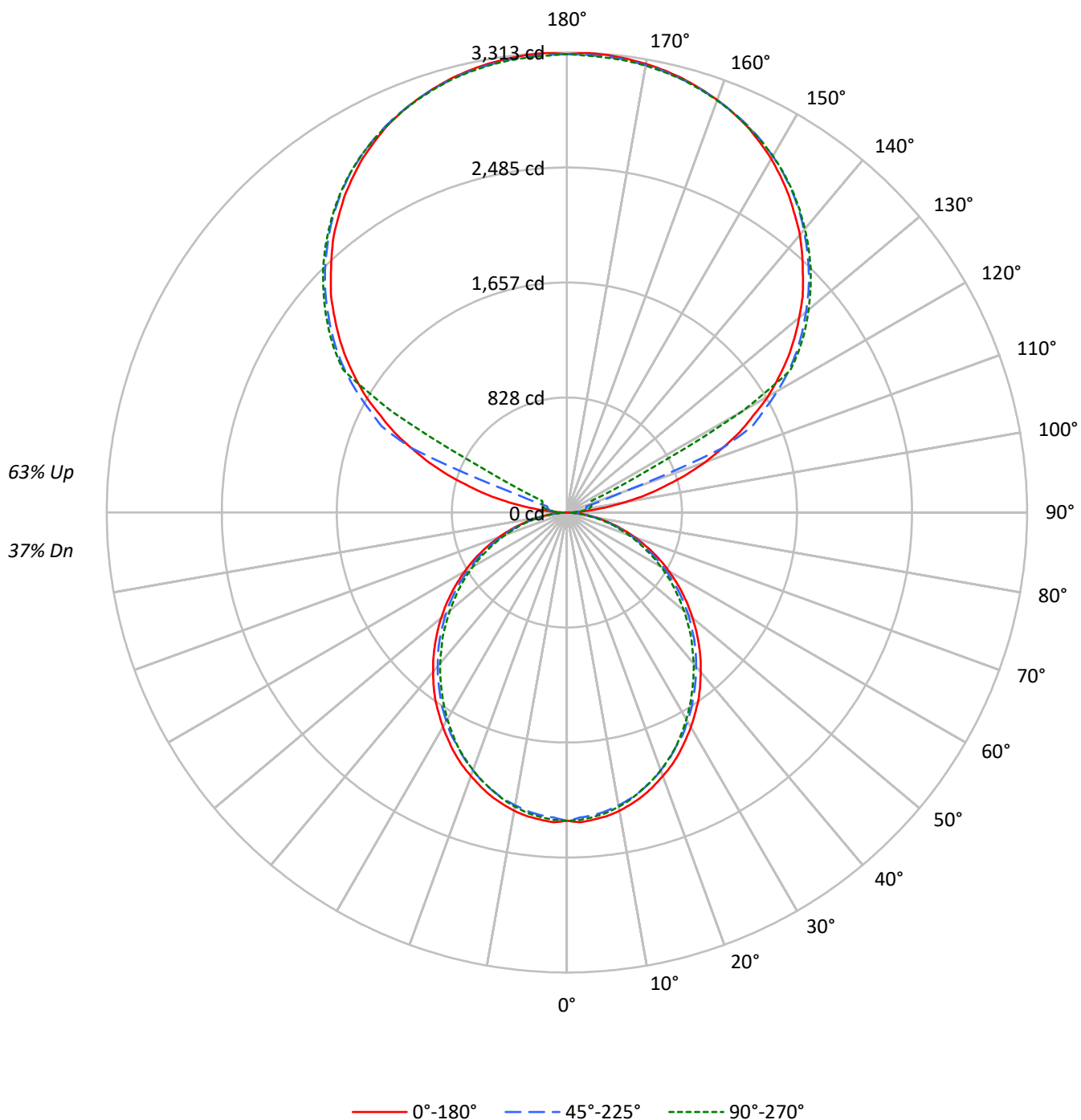
Lumens per Lamp: N/A
Luminaire Lumens: 15330.2 lumens
Efficiency: N/A
Efficacy: 94.5 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.54' x L: 4.09' x H: 0.1')
CIE Type: Semi-Indirect

Input Watts (W): 162.2
Input Voltage (V):
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.9972
Total Harmonic Distortion (THDi): 0.128
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	104	104	104	104	94	94	94	94	76	76	76	59	59	59	44	44	44
1	95	91	87	83	86	82	79	76	67	64	62	52	51	49	39	38	37
2	86	79	73	68	78	72	67	62	58	55	52	46	43	41	34	33	31
3	79	69	62	57	71	63	57	52	51	47	43	40	37	35	30	28	27
4	72	61	54	48	65	56	49	44	46	41	37	36	33	30	27	25	23
5	66	55	47	41	60	50	43	38	41	36	32	32	29	26	24	22	20
6	61	49	41	35	55	45	38	33	37	31	28	29	25	23	22	20	18
7	56	44	36	31	51	40	33	29	33	28	24	26	23	20	20	18	16
8	52	40	32	27	47	37	30	25	30	25	21	24	20	18	19	16	14
9	48	36	29	24	44	33	27	22	28	23	19	22	19	16	17	15	13
10	45	33	26	22	41	31	24	20	25	21	17	20	17	14	16	13	11

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	1651	1651	1651
5°	1653	1628	1639
10°	1640	1606	1617
15°	1616	1580	1582
20°	1584	1543	1547
25°	1551	1499	1506
30°	1511	1459	1454
35°	1473	1411	1398
40°	1425	1362	1346
45°	1378	1313	1292
50°	1327	1262	1230
55°	1273	1203	1173
60°	1212	1133	1108
65°	1146	1061	1031
70°	1061	972	948
75°	944	866	871
80°	803	732	725
85°	583	499	482

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 90°

Vertical Angle: 90°

Luminance: 1696 cd/sqm

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	208.9	1.4
10°-20°	587.9	3.8
20°-30°	863.9	5.6
30°-40°	1003.4	6.5
40°-50°	1002.1	6.5
50°-60°	873.8	5.7
60°-70°	646.0	4.2
70°-80°	365.5	2.4
80°-90°	102.3	0.7
90°-100°	108.8	0.7
100°-110°	405.7	2.6
110°-120°	1076.0	7.0
120°-130°	1784.7	11.6
130°-140°	1895.8	12.4
140°-150°	1761.9	11.5
150°-160°	1416.5	9.2
160°-170°	912.8	6.0
170°-180°	314.2	2.0
0°-30°	1660.7	10.8
0°-40°	2664.1	17.4
0°-60°	4540.1	29.6
0°-90°	5653.8	36.9
90°-120°	1590.6	10.4
90°-150°	7033.0	45.9
90°-180°	9676.0	63.1
0°-180°	15330.2	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	2220	2220	2220	2220	2220	
5°	2220	2212	2188	2205	2201	211
15°	2113	2100	2073	2081	2071	595
25°	1913	1896	1859	1863	1859	880
35°	1650	1629	1594	1582	1571	1030
45°	1343	1328	1296	1272	1264	1036
55°	1016	1003	978	952	941	908
65°	685	672	651	632	621	678
75°	358	354	344	331	335	383
85°	87	85	83	77	75	98
90°	2	29	48	60	64	14
95°	155	76	93	105	103	184
105°	726	798	146	172	182	776
115°	1373	1414	1474	368	196	1352
125°	1942	1973	2018	2035	2042	1732
135°	2403	2441	2462	2486	2482	1856
145°	2787	2785	2825	2842	2830	1743
155°	3069	3048	3076	3090	3072	1414
165°	3234	3220	3227	3243	3227	914
175°	3308	3291	3296	3313	3289	315
180°	3301	3301	3301	3301	3301	

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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	2219.8	2219.8	2219.8	2219.8	2219.8
2.5°	2232.8	2222.1	2198.5	2219.8	2215.7
5°	2219.8	2211.5	2187.9	2204.9	2200.8
7.5°	2204.9	2192.2	2168.6	2185.9	2181.6
10°	2181.6	2166.6	2141.0	2158.0	2151.7
12.5°	2149.4	2136.8	2111.2	2121.8	2117.5
15°	2113.2	2100.5	2072.6	2081.3	2070.6
17.5°	2068.3	2055.7	2027.8	2038.5	2027.8
20°	2019.2	2006.5	1976.6	1983.0	1974.6
22.5°	1970.3	1951.0	1923.2	1923.2	1918.8
25°	1912.6	1895.5	1859.3	1863.4	1859.3
27.5°	1848.4	1833.5	1805.9	1799.5	1788.8
30°	1784.6	1767.3	1735.5	1729.1	1720.5
32.5°	1716.1	1703.5	1669.3	1656.4	1647.8
35°	1650.0	1628.8	1594.5	1581.7	1571.0
37.5°	1575.3	1556.1	1521.8	1506.9	1496.3
40°	1498.5	1481.3	1447.1	1428.1	1419.5
42.5°	1423.8	1406.6	1372.6	1351.1	1338.4
45°	1342.7	1327.8	1295.6	1272.3	1263.7
47.5°	1263.7	1248.7	1214.5	1191.0	1178.3
50°	1180.4	1169.7	1139.8	1109.9	1099.3
52.5°	1099.3	1084.4	1056.7	1033.2	1018.2
55°	1016.1	1003.3	977.7	952.1	941.4
57.5°	932.8	922.2	894.3	868.7	860.2
60°	849.5	841.1	811.3	787.7	781.3
62.5°	768.4	753.5	732.2	710.9	702.3
65°	685.3	672.4	651.1	631.9	621.2
67.5°	599.9	589.1	570.0	555.1	546.5
70°	520.9	512.3	493.0	478.1	469.7
72.5°	439.8	431.2	420.5	405.6	399.3
75°	358.5	354.4	343.5	330.9	335.2
77.5°	286.1	277.4	273.1	266.7	260.5
80°	213.5	211.3	207.0	200.7	196.3
82.5°	145.2	145.2	143.1	134.6	134.6
85°	87.4	85.4	83.4	76.8	74.7
87.5°	38.5	34.2	29.9	23.6	21.3
90°	2.3	28.6	47.7	59.8	64.4
92.5°	59.8	50.2	57.3	62.1	64.4
95°	155.1	76.3	93.0	105.2	102.7
97.5°	279.4	83.7	121.7	129.0	131.3
100°	422.8	95.6	136.1	155.1	160.0
102.5°	580.3	575.7	140.9	167.1	174.4
105°	726.0	797.8	145.8	171.9	181.5
107.5°	895.6	955.2	150.6	176.7	186.3
110°	1058.1	1108.1	418.0	179.2	188.6

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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	1211.0	1253.8	1213.3	183.8	191.1
115°	1373.2	1413.8	1473.6	367.8	196.0
117.5°	1514.2	1561.9	1602.7	1260.9	635.3
120°	1671.9	1707.6	1750.7	1779.4	1456.9
122.5°	1805.5	1843.8	1891.7	1905.9	1908.4
125°	1941.6	1972.8	2018.2	2034.9	2042.0
127.5°	2065.8	2099.3	2135.3	2159.1	2161.4
130°	2182.9	2221.2	2247.3	2273.7	2271.4
132.5°	2302.3	2333.5	2359.6	2381.2	2378.9
135°	2402.7	2441.0	2462.3	2486.4	2481.6
137.5°	2507.7	2536.3	2560.4	2584.2	2577.1
140°	2610.4	2629.6	2655.7	2677.3	2665.4
142.5°	2696.5	2713.3	2744.2	2763.2	2751.3
145°	2787.3	2784.8	2825.3	2842.1	2830.1
147.5°	2865.9	2858.8	2899.4	2911.3	2901.9
150°	2942.4	2925.7	2964.0	2978.2	2966.3
152.5°	3006.8	2987.8	3023.6	3038.0	3021.3
155°	3068.9	3047.6	3076.3	3090.5	3071.5
157.5°	3119.1	3100.1	3121.7	3138.4	3119.1
160°	3162.2	3147.8	3162.2	3176.4	3159.7
162.5°	3200.3	3186.1	3198.0	3214.7	3193.2
165°	3233.7	3219.5	3226.6	3243.4	3226.6
167.5°	3260.1	3245.6	3253.0	3269.7	3248.2
170°	3281.6	3267.2	3272.0	3288.7	3267.2
172.5°	3295.8	3281.6	3286.5	3303.2	3281.6
175°	3307.7	3291.0	3295.8	3312.6	3288.7
177.5°	3312.6	3295.8	3298.4	3315.1	3293.6
180°	3300.7	3300.7	3300.7	3300.7	3300.7

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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	7.66	8.42	8.73	9.48	10.93	7.23	7.99	8.29	9.05	10.50
	3H	9.32	9.99	10.39	11.07	12.53	8.84	9.52	9.91	10.59	12.06
	4H	9.90	10.54	10.98	11.62	13.09	9.43	10.07	10.51	11.14	12.61
	6H	10.29	10.88	11.39	11.96	13.45	9.82	10.41	10.91	11.49	12.97
	8H	10.40	10.96	11.49	12.05	13.53	9.92	10.48	11.02	11.58	13.06
	12H	10.44	10.98	11.54	12.06	13.57	9.96	10.49	11.06	11.58	13.08
4H	2H	8.11	8.75	9.20	9.83	11.30	7.77	8.41	8.86	9.48	10.96
	3H	9.97	10.50	11.07	11.61	13.09	9.58	10.11	10.67	11.21	12.70
	4H	10.68	11.17	11.78	12.26	13.77	10.27	10.77	11.38	11.86	13.36
	6H	11.19	11.61	12.30	12.73	14.23	10.78	11.20	11.89	12.32	13.82
	8H	11.34	11.73	12.45	12.84	14.35	10.93	11.32	12.03	12.43	13.94
	12H	11.41	11.76	12.53	12.88	14.40	10.98	11.34	12.11	12.46	13.98
8H	4H	10.87	11.26	11.98	12.37	13.88	10.51	10.90	11.62	12.01	13.52
	6H	11.50	11.82	12.63	12.97	14.48	11.13	11.46	12.26	12.61	14.12
	8H	11.72	12.00	12.85	13.13	14.66	11.35	11.63	12.49	12.76	14.29
	12H	11.84	12.10	12.99	13.22	14.79	11.46	11.71	12.60	12.84	14.40
12H	4H	10.85	11.21	11.98	12.33	13.85	10.50	10.85	11.62	11.97	13.49
	6H	11.53	11.81	12.66	12.94	14.47	11.17	11.46	12.31	12.59	14.12
	8H	11.76	12.01	12.91	13.14	14.71	11.41	11.66	12.55	12.78	14.35