

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: P921932

Luminaire Tested: DFN2DIP-HX4F0-120D070US940-FLLFLL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P921932
REPORT IS A COMBINATION OF REPORTS P899369 AND P896188
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-HX4F0-120D070US940-FLLFLL
Description: 4 foot, Hexagon Define Geo, with Direct Frosted Lens, Indirect Frosted Lens
Light Source: -
Ballast/Driver: -

Summary

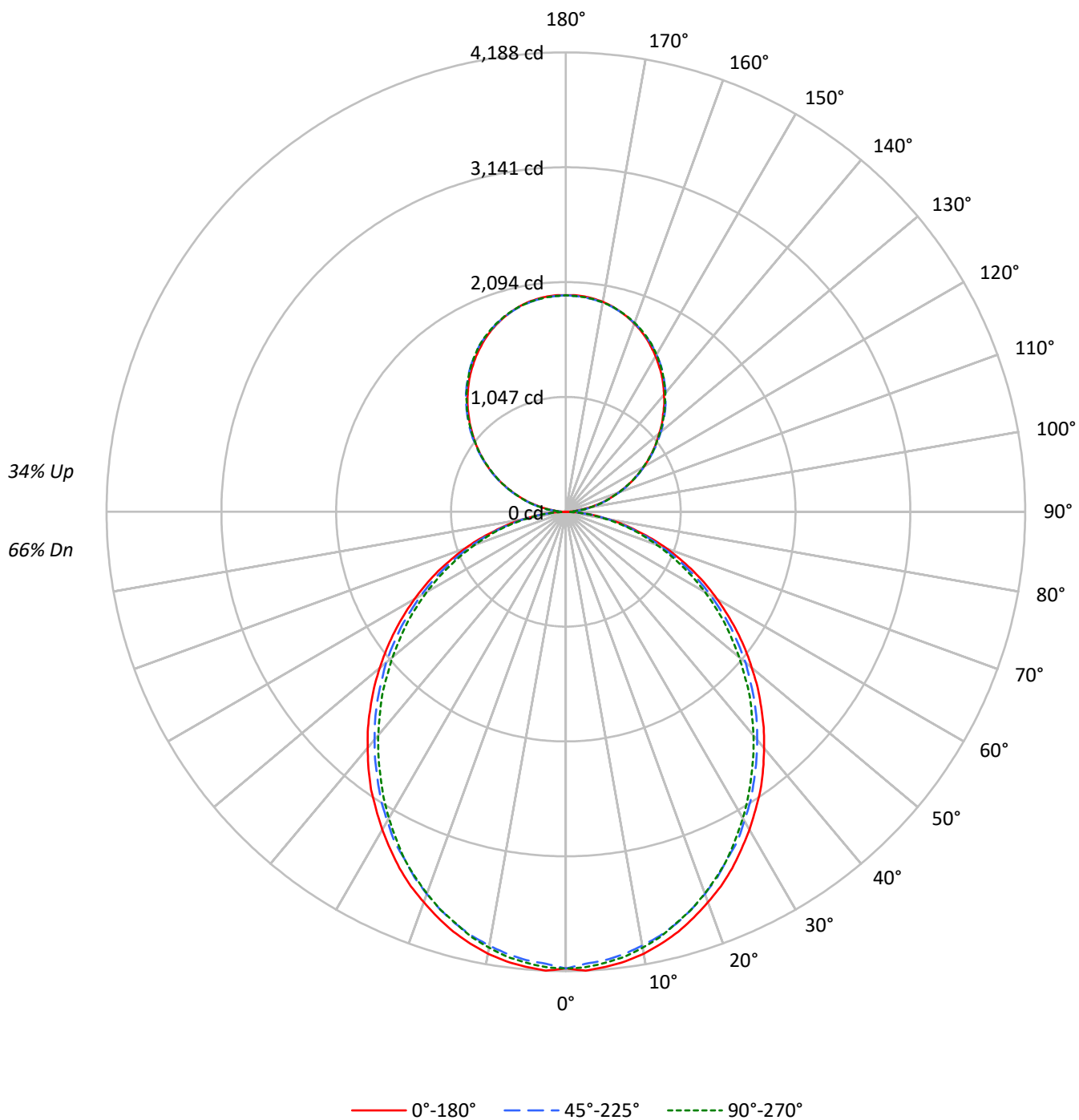
Lumens per Lamp: N/A
Luminaire Lumens: 16117.7 lumens
Efficiency: N/A
Efficacy: 97.3 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.54' x L: 4.09' x H: 0.1')
CIE Type: Semi-Direct

Input Watts (W): 165.7
Input Voltage (V):
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.9954
Total Harmonic Distortion (THDi): 0.076
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	111	111	111	111	104	104	104	104	92	92	92	81	81	81	71	71	71
1	101	97	93	89	95	91	88	85	81	78	76	71	69	67	62	61	60
2	92	85	78	73	87	80	74	70	71	67	63	63	59	56	55	52	50
3	84	74	67	61	79	70	64	58	63	57	53	55	51	48	49	46	43
4	77	66	58	52	72	62	55	49	56	50	45	49	45	41	44	40	37
5	71	59	51	44	66	56	48	43	50	44	39	44	39	36	39	35	32
6	65	53	45	39	61	50	43	37	45	39	34	40	35	31	36	32	28
7	61	48	40	34	57	45	38	33	41	35	30	37	32	28	33	28	25
8	56	44	36	30	53	41	34	29	37	31	27	34	28	25	30	26	23
9	52	40	32	27	49	38	31	26	34	28	24	31	26	22	28	24	21
10	49	37	29	24	46	35	28	24	32	26	22	29	24	20	26	22	19

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	3096	3096	3096
5°	3101	3053	3073
10°	3076	3012	3032
15°	3031	2963	2967
20°	2970	2894	2901
25°	2910	2812	2824
30°	2834	2736	2726
35°	2762	2646	2623
40°	2673	2555	2525
45°	2585	2464	2424
50°	2488	2368	2307
55°	2387	2257	2200
60°	2273	2125	2078
65°	2149	1990	1933
70°	1990	1824	1777
75°	1770	1625	1634
80°	1506	1373	1359
85°	1093	935	904

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 2585 cd/sqm

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	391.9	2.4
10°-20°	1102.6	6.8
20°-30°	1620.4	10.1
30°-40°	1882.0	11.7
40°-50°	1879.7	11.7
50°-60°	1639.0	10.2
60°-70°	1211.6	7.5
70°-80°	685.5	4.3
80°-90°	186.5	1.2
90°-100°	122.2	0.8
100°-110°	388.1	2.4
110°-120°	664.2	4.1
120°-130°	873.6	5.4
130°-140°	980.5	6.1
140°-150°	961.5	6.0
150°-160°	806.6	5.0
160°-170°	534.9	3.3
170°-180°	187.0	1.2
0°-30°	3114.9	19.3
0°-40°	4996.9	31.0
0°-60°	8515.5	52.8
0°-90°	10599.1	65.8
90°-120°	1174.5	7.3
90°-150°	3990.1	24.8
90°-180°	5519.0	34.2
0°-180°	16117.7	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	4164	4164	4164	4164	4164	
5°	4164	4148	4104	4136	4128	395
15°	3964	3940	3888	3904	3884	1116
25°	3587	3555	3487	3495	3487	1651
35°	3095	3055	2991	2967	2947	1933
45°	2518	2490	2430	2386	2370	1944
55°	1906	1882	1834	1786	1766	1704
65°	1285	1261	1221	1185	1165	1271
75°	672	665	644	621	629	718
85°	164	160	156	144	140	183
90°	2	21	58	55	56	15
95°	87	104	107	107	104	97
105°	358	363	367	370	370	378
115°	667	676	673	671	667	659
125°	970	984	980	974	972	866
135°	1254	1272	1276	1274	1269	969
145°	1522	1534	1544	1546	1539	951
155°	1741	1746	1751	1759	1754	801
165°	1894	1892	1892	1904	1896	534
175°	1970	1966	1962	1974	1964	187
180°	1974	1974	1974	1974	1974	

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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	4163.7	4163.7	4163.7	4163.7	4163.7
2.5°	4187.8	4167.9	4123.7	4163.7	4156.0
5°	4163.7	4147.9	4103.7	4135.6	4127.9
7.5°	4135.6	4111.8	4067.6	4099.9	4091.9
10°	4091.9	4063.8	4015.8	4047.7	4035.8
12.5°	4031.5	4007.7	3959.7	3979.7	3971.6
15°	3963.6	3939.8	3887.5	3903.6	3883.7
17.5°	3879.5	3855.7	3803.4	3823.4	3803.4
20°	3787.3	3763.5	3707.5	3719.3	3703.6
22.5°	3695.5	3659.4	3607.1	3607.1	3599.1
25°	3587.2	3555.3	3487.4	3495.1	3487.4
27.5°	3467.0	3439.0	3387.2	3375.2	3355.3
30°	3347.2	3314.9	3255.0	3243.2	3227.0
32.5°	3218.9	3195.2	3131.0	3106.8	3090.7
35°	3094.9	3055.0	2990.8	2966.6	2946.7
37.5°	2954.7	2918.7	2854.5	2826.5	2806.5
40°	2810.8	2778.5	2714.3	2678.6	2662.5
42.5°	2670.6	2638.3	2574.5	2534.2	2510.4
45°	2518.5	2490.5	2430.1	2386.4	2370.3
47.5°	2370.3	2342.2	2278.1	2233.9	2210.1
50°	2213.9	2194.0	2137.9	2081.8	2061.8
52.5°	2061.8	2033.8	1982.0	1937.8	1909.8
55°	1905.9	1881.8	1833.7	1785.7	1765.8
57.5°	1749.6	1729.7	1677.4	1629.4	1613.3
60°	1593.3	1577.6	1521.5	1477.4	1465.4
62.5°	1441.3	1413.2	1373.3	1333.4	1317.2
65°	1285.4	1261.1	1221.2	1185.1	1165.2
67.5°	1125.2	1104.8	1069.2	1041.2	1025.0
70°	977.0	960.8	924.7	896.7	881.0
72.5°	824.9	808.8	788.8	760.8	748.9
75°	672.4	664.8	644.3	620.6	628.7
77.5°	536.5	520.3	512.3	500.3	488.5
80°	400.6	396.3	388.3	376.4	368.3
82.5°	272.2	272.2	268.5	252.4	252.4
85°	164.0	160.2	156.3	144.0	140.2
87.5°	72.2	64.1	56.1	44.1	39.9
90°	1.8	21.4	58.3	54.8	56.5
92.5°	36.9	50.0	51.8	53.6	53.6
95°	86.9	103.5	106.6	106.6	103.5
97.5°	144.6	160.1	166.7	166.7	166.7
100°	211.2	225.0	229.7	229.7	227.9
102.5°	281.5	291.6	298.2	300.0	298.2
105°	358.3	363.0	366.6	369.6	369.6
107.5°	434.4	441.6	441.6	442.8	434.4
110°	508.3	517.8	517.8	517.8	513.0

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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	588.0	598.2	596.4	591.6	588.0
115°	666.6	676.1	673.2	671.4	666.6
117.5°	744.5	757.6	749.3	744.5	739.8
120°	823.0	836.2	823.0	823.0	817.7
122.5°	894.5	911.1	902.9	898.0	894.5
125°	969.5	984.4	979.6	974.3	972.5
127.5°	1042.7	1061.1	1054.6	1047.5	1042.7
130°	1111.2	1132.6	1129.6	1126.1	1119.5
132.5°	1187.9	1204.6	1205.8	1197.5	1192.7
135°	1254.0	1272.4	1276.0	1274.2	1269.4
137.5°	1327.8	1342.6	1345.6	1344.4	1337.3
140°	1392.7	1407.6	1415.9	1415.9	1409.3
142.5°	1459.3	1474.2	1478.9	1480.7	1474.2
145°	1522.4	1534.3	1543.8	1545.6	1539.1
147.5°	1579.0	1593.8	1601.0	1603.9	1597.4
150°	1637.3	1647.3	1653.9	1659.3	1653.9
152.5°	1689.0	1699.2	1707.4	1714.0	1707.4
155°	1740.8	1745.5	1751.0	1759.3	1753.9
157.5°	1785.5	1789.0	1792.0	1803.9	1795.5
160°	1825.3	1828.9	1830.7	1840.8	1833.6
162.5°	1862.2	1862.2	1864.0	1875.3	1867.0
165°	1893.7	1891.9	1891.9	1903.9	1895.5
167.5°	1922.3	1917.0	1917.0	1928.9	1920.6
170°	1943.8	1939.0	1937.2	1949.1	1939.0
172.5°	1958.6	1953.8	1952.0	1964.0	1953.8
175°	1970.5	1965.8	1962.2	1974.1	1964.0
177.5°	1977.1	1972.3	1968.7	1978.9	1968.7
180°	1974.1	1974.1	1974.1	1974.1	1974.1

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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	12.54	13.56	13.35	14.39	15.42	12.11	13.13	12.92	13.96	14.99
	3H	14.21	15.13	15.03	15.97	17.03	13.74	14.66	14.56	15.50	16.55
	4H	14.81	15.68	15.65	16.52	17.59	14.33	15.20	15.17	16.05	17.12
	6H	15.22	16.02	16.07	16.87	17.95	14.74	15.54	15.59	16.40	17.48
	8H	15.33	16.09	16.19	16.96	18.04	14.85	15.61	15.71	16.49	17.57
	12H	15.38	16.11	16.25	16.98	18.08	14.90	15.63	15.76	16.49	17.60
4H	2H	13.02	13.89	13.86	14.74	15.80	12.68	13.54	13.52	14.39	15.46
	3H	14.90	15.63	15.76	16.51	17.59	14.51	15.23	15.36	16.12	17.20
	4H	15.62	16.28	16.49	17.16	18.27	15.22	15.88	16.08	16.76	17.87
	6H	16.15	16.72	17.03	17.62	18.73	15.74	16.31	16.62	17.21	18.32
	8H	16.30	16.84	17.19	17.73	18.86	15.89	16.42	16.78	17.32	18.45
	12H	16.38	16.86	17.29	17.78	18.91	15.96	16.44	16.87	17.36	18.49
8H	4H	15.83	16.37	16.72	17.26	18.39	15.47	16.01	16.36	16.90	18.03
	6H	16.47	16.92	17.39	17.85	18.98	16.11	16.55	17.02	17.49	18.62
	8H	16.70	17.09	17.62	18.02	19.16	16.33	16.72	17.25	17.65	18.79
	12H	16.84	17.18	17.76	18.11	19.30	16.45	16.80	17.38	17.72	18.91
12H	4H	15.83	16.31	16.73	17.23	18.36	15.47	15.96	16.38	16.87	18.00
	6H	16.50	16.90	17.43	17.83	18.97	16.15	16.55	17.08	17.48	18.62
	8H	16.76	17.10	17.68	18.02	19.22	16.40	16.74	17.32	17.67	18.86