

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: P928656

Luminaire Tested: DFN2DIP-HX4F0-080D090US930-FLLONL

Issue Date: 12/12/2024

Test Information

Test Method: LM-79-2019
Report Number: P928656
REPORT IS A COMBINATION OF REPORTS P900917 AND P896187
Test Lab: INNOVATION CENTER
Issue Date: 12/12/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-HX4F0-080D090US930-FLLONL
Description: 4 foot, Hexagon Define Geo, with Direct Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

Summary

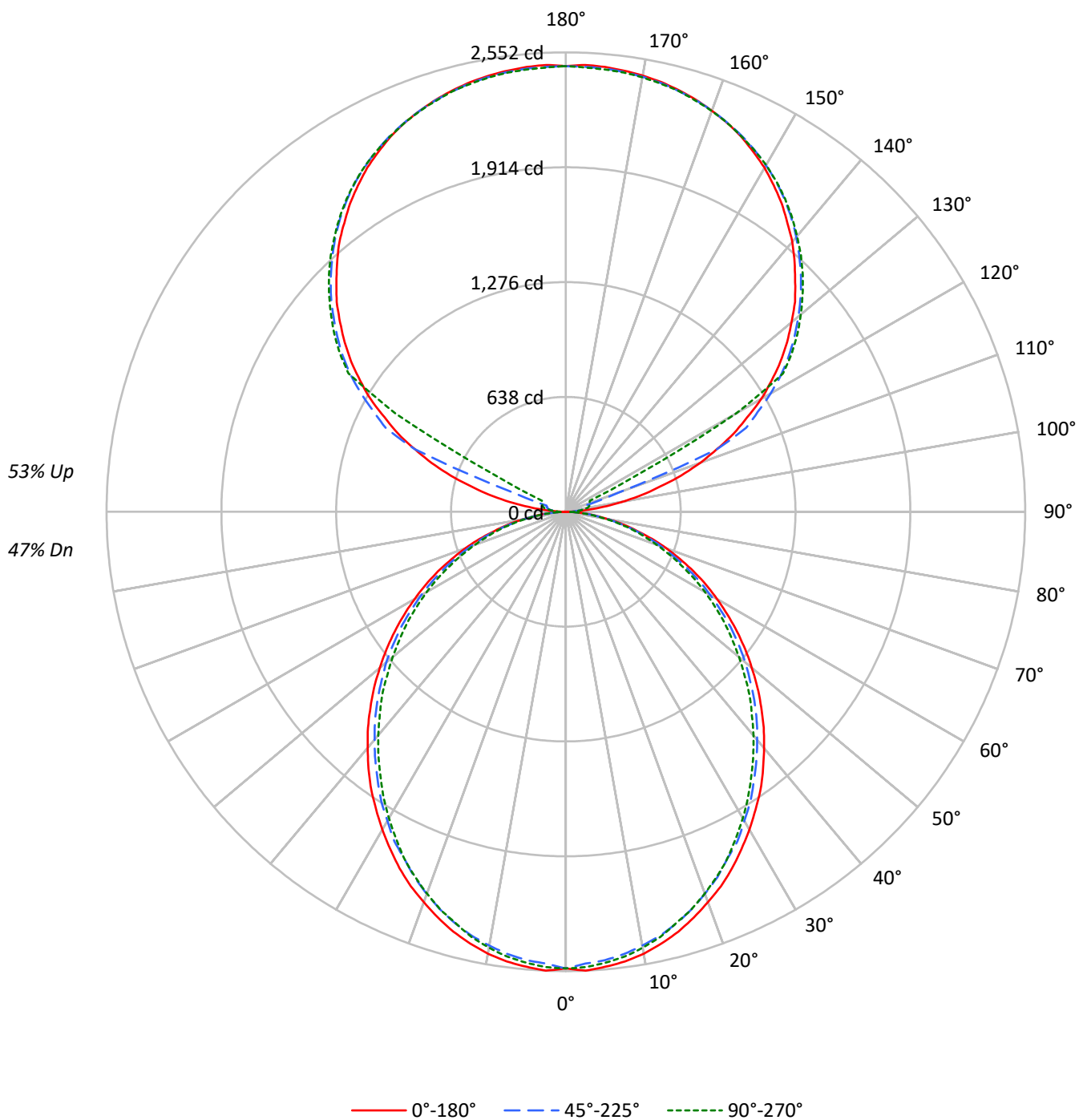
Lumens per Lamp: N/A
Luminaire Lumens: 13716.5 lumens
Efficiency: N/A
Efficacy: 94.9 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.54' x L: 4.09' x H: 0.1')
CIE Type: General Diffuse

Input Watts (W): 144.6
Input Voltage (V):
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.9613
Total Harmonic Distortion (THDi): 0.083
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	106	106	106	106	98	98	98	98	82	82	82	67	67	67	53	53	53
1	97	93	89	85	89	85	82	79	72	69	67	59	57	56	47	46	45
2	88	81	75	70	81	75	69	65	63	59	56	52	49	47	42	40	38
3	81	71	64	58	74	66	59	54	55	51	47	46	42	39	37	34	32
4	74	63	55	49	68	58	51	46	49	44	40	41	37	34	33	30	28
5	68	56	48	42	62	52	45	39	44	39	34	37	32	29	30	27	24
6	62	50	42	36	57	47	39	34	40	34	30	33	29	26	27	24	21
7	58	45	38	32	53	42	35	30	36	30	26	30	26	23	25	21	19
8	53	41	34	28	49	38	31	27	33	27	23	28	23	20	23	19	17
9	50	38	30	25	46	35	28	24	30	25	21	25	21	18	21	18	15
10	47	34	27	23	43	32	26	21	28	22	19	23	19	16	19	16	14

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	1886	1886	1886
5°	1890	1860	1873
10°	1874	1835	1848
15°	1847	1805	1808
20°	1810	1764	1768
25°	1773	1714	1721
30°	1727	1667	1661
35°	1683	1612	1598
40°	1629	1557	1538
45°	1575	1501	1477
50°	1516	1443	1406
55°	1455	1375	1341
60°	1385	1295	1266
65°	1309	1212	1178
70°	1213	1111	1083
75°	1079	990	995
80°	918	836	828
85°	666	570	551

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 1575 cd/sqm

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	238.8	1.7
10°-20°	671.8	4.9
20°-30°	987.3	7.2
30°-40°	1146.7	8.4
40°-50°	1145.3	8.3
50°-60°	998.7	7.3
60°-70°	738.2	5.4
70°-80°	417.7	3.0
80°-90°	114.6	0.8
90°-100°	81.6	0.6
100°-110°	304.3	2.2
110°-120°	807.0	5.9
120°-130°	1338.5	9.8
130°-140°	1421.8	10.4
140°-150°	1321.4	9.6
150°-160°	1062.4	7.7
160°-170°	684.6	5.0
170°-180°	235.6	1.7
0°-30°	1898.0	13.8
0°-40°	3044.7	22.2
0°-60°	5188.6	37.8
0°-90°	6459.2	47.1
90°-120°	1193.0	8.7
90°-150°	5274.7	38.5
90°-180°	7257.0	52.9
0°-180°	13716.5	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	2537	2537	2537	2537	2537	
5°	2537	2527	2500	2520	2515	241
15°	2415	2401	2369	2379	2366	680
25°	2186	2166	2125	2130	2125	1006
35°	1886	1862	1822	1808	1795	1178
45°	1535	1517	1481	1454	1444	1184
55°	1161	1146	1117	1088	1076	1038
65°	783	768	744	722	710	774
75°	410	405	393	378	383	437
85°	100	98	95	88	85	111
90°	2	22	36	45	48	13
95°	116	57	70	79	77	138
105°	544	598	109	129	136	582
115°	1030	1060	1105	276	147	1014
125°	1456	1480	1514	1526	1532	1299
135°	1802	1831	1847	1865	1861	1392
145°	2090	2088	2119	2132	2123	1307
155°	2302	2286	2307	2318	2304	1061
165°	2425	2415	2420	2432	2420	685
175°	2481	2468	2472	2484	2466	236
180°	2476	2476	2476	2476	2476	

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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	2536.9	2536.9	2536.9	2536.9	2536.9
2.5°	2551.7	2539.5	2512.6	2536.9	2532.3
5°	2536.9	2527.4	2500.5	2519.9	2515.3
7.5°	2519.9	2505.4	2478.5	2498.1	2493.2
10°	2493.2	2476.1	2446.9	2466.3	2459.1
12.5°	2456.5	2442.0	2412.7	2424.9	2420.0
15°	2415.1	2400.6	2368.7	2378.6	2366.4
17.5°	2363.8	2349.3	2317.5	2329.7	2317.5
20°	2307.7	2293.2	2259.0	2266.3	2256.7
22.5°	2251.8	2229.8	2197.9	2197.9	2193.0
25°	2185.7	2166.4	2124.9	2129.6	2124.9
27.5°	2112.5	2095.4	2063.8	2056.6	2044.4
30°	2039.5	2019.8	1983.4	1976.1	1966.3
32.5°	1961.4	1946.9	1907.8	1893.0	1883.2
35°	1885.7	1861.5	1822.3	1807.6	1795.4
37.5°	1800.3	1778.3	1739.3	1722.2	1710.0
40°	1712.6	1692.9	1653.9	1632.1	1622.3
42.5°	1627.2	1607.5	1568.7	1544.1	1529.7
45°	1534.6	1517.4	1480.7	1454.0	1444.3
47.5°	1444.3	1427.1	1388.0	1361.1	1346.6
50°	1349.0	1336.8	1302.6	1268.5	1256.3
52.5°	1256.3	1239.2	1207.7	1180.8	1163.7
55°	1161.3	1146.5	1117.4	1088.1	1075.9
57.5°	1066.1	1054.0	1022.1	992.8	983.0
60°	970.8	961.3	927.1	900.2	892.9
62.5°	878.2	861.1	836.8	812.5	802.6
65°	783.2	768.5	744.1	722.1	709.9
67.5°	685.6	673.2	651.4	634.4	624.5
70°	595.3	585.4	563.5	546.4	536.8
72.5°	502.6	492.8	480.6	463.6	456.3
75°	409.7	405.1	392.7	378.2	383.0
77.5°	326.9	317.0	312.1	304.9	297.6
80°	244.1	241.5	236.6	229.3	224.4
82.5°	165.9	165.9	163.6	153.7	153.7
85°	99.9	97.6	95.3	87.8	85.4
87.5°	44.0	39.1	34.1	26.9	24.4
90°	1.7	21.5	35.7	44.9	48.2
92.5°	44.9	37.7	43.0	46.6	48.2
95°	116.4	57.2	69.8	78.9	77.0
97.5°	209.5	62.8	91.3	96.7	98.5
100°	317.1	71.7	102.1	116.4	120.0
102.5°	435.2	431.8	105.7	125.3	130.8
105°	544.5	598.4	109.3	128.9	136.1
107.5°	671.7	716.4	113.0	132.5	139.8
110°	793.6	831.1	313.5	134.4	141.5



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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	908.2	940.3	909.9	137.8	143.4
115°	1029.9	1060.3	1105.2	275.9	146.9
117.5°	1135.6	1171.4	1202.0	945.7	476.4
120°	1253.9	1280.7	1313.0	1334.5	1092.7
122.5°	1354.1	1382.8	1418.8	1429.3	1431.3
125°	1456.2	1479.6	1513.6	1526.2	1531.5
127.5°	1549.3	1574.4	1601.5	1619.3	1621.0
130°	1637.2	1665.9	1685.5	1705.2	1703.6
132.5°	1726.7	1750.1	1769.7	1785.9	1784.2
135°	1802.0	1830.7	1846.7	1864.8	1861.2
137.5°	1880.8	1902.2	1920.3	1938.2	1932.9
140°	1957.7	1972.2	1991.8	2007.9	1999.0
142.5°	2022.4	2035.0	2058.1	2072.4	2063.5
145°	2090.5	2088.5	2119.0	2131.6	2122.6
147.5°	2149.4	2144.1	2174.5	2183.5	2176.4
150°	2206.9	2194.3	2223.0	2233.6	2224.7
152.5°	2255.1	2240.8	2267.7	2278.5	2265.9
155°	2301.7	2285.7	2307.2	2317.9	2303.6
157.5°	2339.4	2325.1	2341.3	2353.8	2339.4
160°	2371.6	2360.8	2371.6	2382.3	2369.8
162.5°	2400.2	2389.5	2398.5	2411.0	2394.9
165°	2425.3	2414.6	2420.0	2432.5	2420.0
167.5°	2445.1	2434.2	2439.7	2452.3	2436.1
170°	2461.2	2450.4	2454.0	2466.5	2450.4
172.5°	2471.9	2461.2	2464.8	2477.4	2461.2
175°	2480.8	2468.2	2471.9	2484.4	2466.5
177.5°	2484.4	2471.9	2473.8	2486.3	2470.2
180°	2475.5	2475.5	2475.5	2475.5	2475.5

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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	9.20	10.04	10.18	11.03	12.35	8.77	9.61	9.75	10.60	11.91
	3H	10.86	11.61	11.85	12.62	13.95	10.39	11.14	11.38	12.14	13.48
	4H	11.45	12.16	12.45	13.17	14.51	10.98	11.68	11.98	12.69	14.03
	6H	11.85	12.50	12.86	13.51	14.87	11.37	12.03	12.39	13.04	14.39
	8H	11.95	12.58	12.97	13.60	14.95	11.48	12.10	12.50	13.13	14.48
	12H	12.00	12.59	13.03	13.61	14.99	11.52	12.11	12.55	13.13	14.51
4H	2H	9.66	10.37	10.67	11.38	12.72	9.32	10.03	10.33	11.03	12.37
	3H	11.53	12.12	12.55	13.15	14.51	11.13	11.73	12.15	12.76	14.12
	4H	12.24	12.78	13.27	13.81	15.19	11.83	12.38	12.86	13.40	14.78
	6H	12.76	13.22	13.79	14.27	15.65	12.35	12.81	13.38	13.86	15.24
	8H	12.91	13.34	13.94	14.38	15.77	12.49	12.93	13.53	13.97	15.36
	12H	12.98	13.37	14.04	14.43	15.82	12.55	12.95	13.61	14.01	15.40
8H	4H	12.44	12.87	13.48	13.92	15.30	12.08	12.51	13.11	13.56	14.94
	6H	13.07	13.43	14.13	14.51	15.90	12.70	13.06	13.77	14.15	15.54
	8H	13.29	13.61	14.36	14.68	16.08	12.92	13.24	13.99	14.31	15.71
	12H	13.42	13.70	14.49	14.76	16.21	13.03	13.31	14.11	14.38	15.83
12H	4H	12.42	12.81	13.48	13.87	15.27	12.07	12.46	13.13	13.52	14.92
	6H	13.10	13.41	14.17	14.48	15.89	12.75	13.06	13.82	14.13	15.54
	8H	13.34	13.62	14.41	14.68	16.13	12.98	13.26	14.06	14.33	15.77