

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: P927035

Luminaire Tested: DFN2DIP-HX4F0-080D090US830-FLLFLL

Issue Date: 12/12/2024

Test Information

Test Method: LM-79-2019
Report Number: P927035
REPORT IS A COMBINATION OF REPORTS P899397 AND P896187
Test Lab: INNOVATION CENTER
Issue Date: 12/12/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-HX4F0-080D090US830-FLLFLL
Description: 4 foot, Hexagon Define Geo, with Direct Frosted Lens, Indirect Frosted Lens
Light Source: -
Ballast/Driver: -

Summary

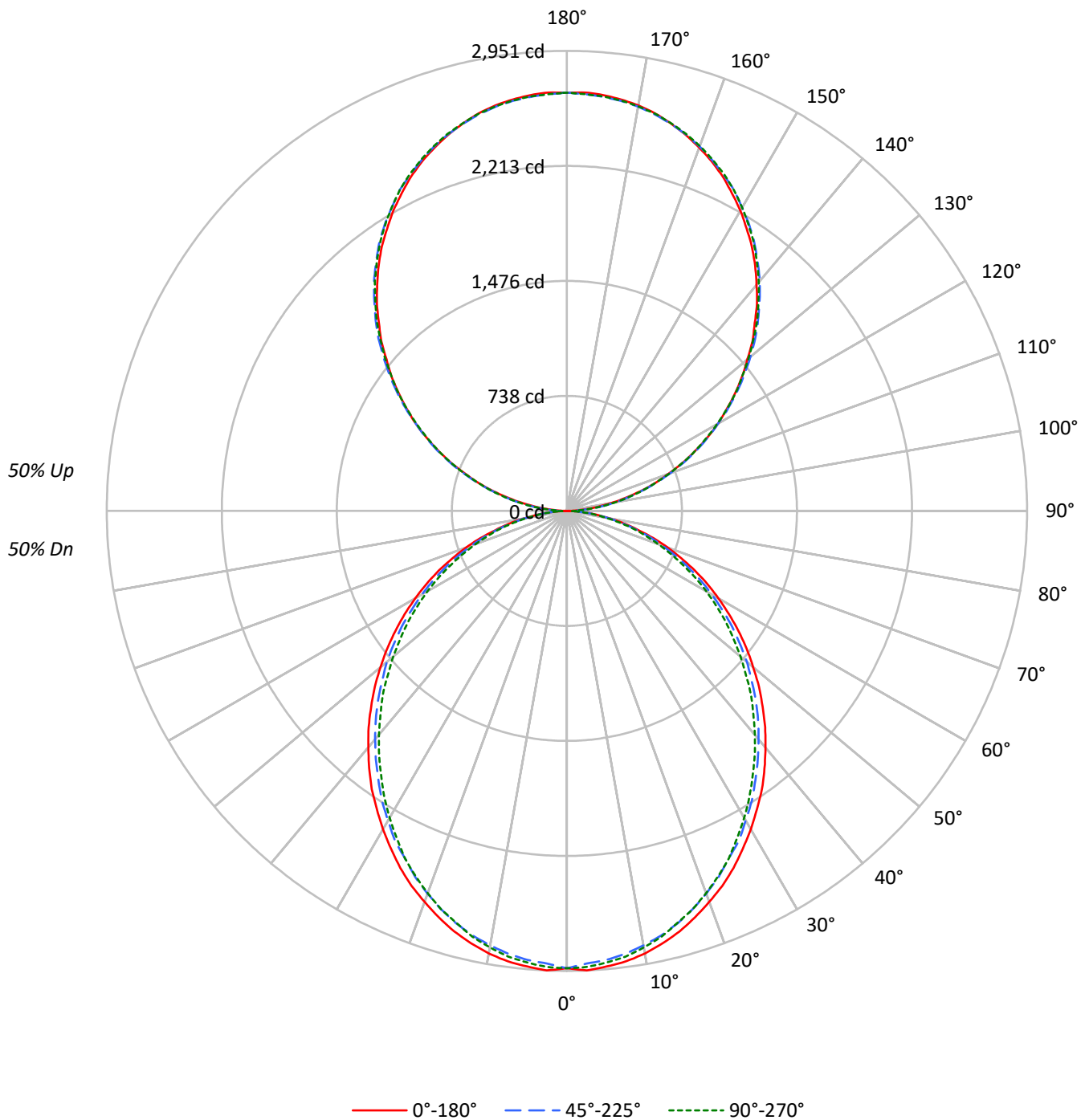
Lumens per Lamp: N/A
Luminaire Lumens: 14971.6 lumens
Efficiency: N/A
Efficacy: 103.5 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.54' x L: 4.09' x H: 0.1')
CIE Type: General Diffuse

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					0
RW	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	50	30	10
RCR																				
0	107	107	107	107	99	99	99	99	83	83	83	69	69	69	56	56	56	56	56	56
1	98	93	90	86	90	86	83	80	73	71	68	61	59	58	50	48	47	47	47	42
2	89	82	75	70	82	75	70	66	64	60	57	53	51	48	44	42	40	40	40	35
3	81	72	64	59	75	66	60	55	56	52	48	47	44	41	39	36	34	34	34	30
4	74	63	56	50	68	59	52	46	50	45	41	42	38	35	35	32	29	29	29	26
5	68	57	48	42	63	53	45	40	45	39	35	38	34	30	31	28	25	25	25	22
6	63	51	43	37	58	47	40	35	40	35	31	34	30	26	28	25	22	22	22	20
7	58	46	38	32	53	43	36	30	37	31	27	31	27	23	26	22	20	20	20	17
8	54	42	34	29	50	39	32	27	33	28	24	28	24	21	24	20	18	18	18	16
9	50	38	30	25	46	35	29	24	31	25	21	26	22	19	22	19	16	16	16	14
10	47	35	28	23	43	33	26	22	28	23	19	24	20	17	20	17	15	15	15	13

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	2181	2181	2181
5°	2185	2151	2166
10°	2168	2123	2137
15°	2136	2088	2091
20°	2093	2039	2044
25°	2050	1982	1990
30°	1997	1928	1921
35°	1946	1864	1848
40°	1884	1800	1779
45°	1822	1736	1708
50°	1753	1668	1626
55°	1682	1591	1550
60°	1602	1498	1464
65°	1514	1402	1362
70°	1402	1285	1252
75°	1247	1145	1151
80°	1062	967	958
85°	771	659	637

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 90°

Vertical Angle: 90°

Luminance: 2022 cd/sqm

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	276.1	1.8
10°-20°	776.9	5.2
20°-30°	1141.8	7.6
30°-40°	1326.1	8.9
40°-50°	1324.5	8.8
50°-60°	1154.9	7.7
60°-70°	853.7	5.7
70°-80°	483.0	3.2
80°-90°	135.1	0.9
90°-100°	166.0	1.1
100°-110°	527.5	3.5
110°-120°	902.7	6.0
120°-130°	1187.1	7.9
130°-140°	1332.5	8.9
140°-150°	1306.6	8.7
150°-160°	1096.1	7.3
160°-170°	726.9	4.9
170°-180°	254.1	1.7
0°-30°	2194.9	14.7
0°-40°	3521.0	23.5
0°-60°	6000.4	40.1
0°-90°	7472.2	49.9
90°-120°	1596.1	10.7
90°-150°	5422.3	36.2
90°-180°	7499.0	50.1
0°-180°	14971.6	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	2934	2934	2934	2934	2934	
5°	2934	2923	2892	2914	2909	278
15°	2793	2776	2739	2751	2737	787
25°	2528	2505	2457	2463	2457	1163
35°	2181	2153	2107	2090	2076	1362
45°	1775	1755	1712	1682	1670	1370
55°	1343	1326	1292	1258	1244	1201
65°	906	889	860	835	821	895
75°	474	468	454	437	443	506
85°	116	113	110	102	99	129
90°	2	29	79	74	77	15
95°	118	141	145	145	141	131
105°	487	493	498	502	502	514
115°	906	919	915	912	906	896
125°	1318	1338	1331	1324	1322	1177
135°	1704	1729	1734	1732	1725	1317
145°	2069	2085	2098	2100	2092	1293
155°	2366	2372	2379	2391	2384	1089
165°	2574	2571	2571	2587	2576	726
175°	2678	2671	2666	2683	2669	254
180°	2683	2683	2683	2683	2683	

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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	2933.8	2933.8	2933.8	2933.8	2933.8
2.5°	2950.9	2936.8	2905.7	2933.8	2928.4
5°	2933.8	2922.8	2891.7	2914.1	2908.7
7.5°	2914.1	2897.3	2866.2	2889.0	2883.3
10°	2883.3	2863.5	2829.7	2852.1	2843.8
12.5°	2840.8	2824.0	2790.2	2804.2	2798.6
15°	2792.9	2776.1	2739.3	2750.7	2736.6
17.5°	2733.6	2716.9	2680.0	2694.1	2680.0
20°	2668.7	2651.9	2612.4	2620.8	2609.7
22.5°	2604.0	2578.6	2541.7	2541.7	2536.1
25°	2527.7	2505.3	2457.4	2462.8	2457.4
27.5°	2443.0	2423.3	2386.7	2378.3	2364.3
30°	2358.6	2335.8	2293.7	2285.3	2273.9
32.5°	2268.2	2251.4	2206.2	2189.1	2177.8
35°	2180.8	2152.7	2107.4	2090.4	2076.3
37.5°	2082.0	2056.5	2011.4	1991.6	1977.6
40°	1980.6	1957.8	1912.6	1887.5	1876.0
42.5°	1881.8	1859.0	1814.1	1785.7	1769.0
45°	1774.6	1754.8	1712.3	1681.5	1670.2
47.5°	1670.2	1650.4	1605.2	1574.1	1557.3
50°	1560.0	1546.0	1506.4	1466.9	1452.9
52.5°	1452.9	1433.1	1396.6	1365.5	1345.7
55°	1343.0	1325.9	1292.2	1258.3	1244.2
57.5°	1232.9	1218.8	1182.0	1148.2	1136.7
60°	1122.7	1111.7	1072.1	1041.0	1032.6
62.5°	1015.5	995.8	967.7	939.6	928.2
65°	905.7	888.7	860.5	835.1	821.0
67.5°	792.8	778.5	753.3	733.6	722.2
70°	688.4	677.0	651.6	631.9	620.7
72.5°	581.2	569.9	555.8	536.1	527.7
75°	473.8	468.4	454.1	437.3	443.0
77.5°	378.0	366.6	361.0	352.6	344.2
80°	282.3	279.3	273.6	265.2	259.5
82.5°	191.9	191.9	189.2	177.8	177.8
85°	115.6	112.8	110.2	101.5	98.8
87.5°	50.9	45.2	39.5	31.1	28.2
90°	2.5	29.1	79.3	74.4	76.8
92.5°	50.1	68.0	70.4	72.8	72.8
95°	118.1	140.7	144.8	144.8	140.7
97.5°	196.5	217.5	226.5	226.5	226.5
100°	287.1	305.7	312.2	312.2	309.8
102.5°	382.6	396.3	405.2	407.6	405.2
105°	486.9	493.3	498.2	502.3	502.3
107.5°	590.4	600.1	600.1	601.7	590.4
110°	690.7	703.7	703.7	703.7	697.2



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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	799.1	812.8	810.4	804.0	799.1
115°	905.8	918.7	914.7	912.3	905.8
117.5°	1011.8	1029.6	1018.3	1011.8	1005.3
120°	1118.6	1136.3	1118.6	1118.6	1111.2
122.5°	1215.5	1238.3	1226.9	1220.4	1215.5
125°	1317.5	1337.7	1331.3	1323.9	1321.6
127.5°	1417.0	1442.0	1433.2	1423.5	1417.0
130°	1510.0	1539.1	1535.0	1530.1	1521.3
132.5°	1614.3	1636.9	1638.5	1627.2	1620.8
135°	1704.0	1729.1	1734.0	1731.6	1725.2
137.5°	1804.3	1824.6	1828.6	1827.0	1817.3
140°	1892.5	1912.7	1924.0	1924.0	1915.2
142.5°	1983.1	2003.3	2009.8	2012.2	2003.3
145°	2068.9	2085.0	2097.9	2100.4	2091.5
147.5°	2145.7	2165.9	2175.6	2179.6	2170.8
150°	2225.0	2238.7	2247.6	2254.8	2247.6
152.5°	2295.3	2309.0	2320.3	2329.3	2320.3
155°	2365.7	2372.1	2379.4	2390.7	2383.5
157.5°	2426.3	2431.2	2435.2	2451.3	2440.0
160°	2480.5	2485.4	2487.8	2501.5	2491.8
162.5°	2530.6	2530.6	2533.1	2548.4	2537.1
165°	2573.5	2571.0	2571.0	2587.3	2575.9
167.5°	2612.3	2605.1	2605.1	2621.2	2609.9
170°	2641.5	2634.9	2632.6	2648.7	2634.9
172.5°	2661.6	2655.2	2652.8	2669.0	2655.2
175°	2677.8	2671.3	2666.5	2682.7	2669.0
177.5°	2686.7	2680.3	2675.4	2689.1	2675.4
180°	2682.7	2682.7	2682.7	2682.7	2682.7

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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	9.97	10.83	10.93	11.81	13.08	9.54	10.40	10.50	11.38	12.65
	3H	11.63	12.41	12.60	13.39	14.68	11.16	11.93	12.13	12.92	14.21
	4H	12.22	12.95	13.20	13.94	15.24	11.75	12.48	12.73	13.47	14.77
	6H	12.62	13.30	13.62	14.29	15.60	12.15	12.82	13.14	13.81	15.13
	8H	12.73	13.37	13.73	14.38	15.69	12.25	12.89	13.25	13.90	15.21
	12H	12.78	13.39	13.78	14.39	15.73	12.30	12.91	13.30	13.91	15.24
4H	2H	10.44	11.17	11.42	12.15	13.46	10.09	10.82	11.08	11.81	13.11
	3H	12.30	12.91	13.30	13.93	15.24	11.91	12.52	12.91	13.53	14.85
	4H	13.02	13.58	14.02	14.58	15.92	12.61	13.17	13.62	14.18	15.52
	6H	13.53	14.01	14.55	15.05	16.38	13.12	13.60	14.14	14.64	15.97
	8H	13.68	14.13	14.70	15.16	16.51	13.27	13.72	14.29	14.74	16.10
	12H	13.76	14.16	14.79	15.20	16.56	13.33	13.74	14.37	14.78	16.14
8H	4H	13.21	13.66	14.23	14.69	16.04	12.85	13.30	13.87	14.33	15.68
	6H	13.85	14.22	14.89	15.28	16.63	13.48	13.86	14.53	14.92	16.27
	8H	14.07	14.40	15.12	15.45	16.82	13.70	14.03	14.75	15.08	16.45
	12H	14.20	14.49	15.26	15.54	16.95	13.82	14.10	14.87	15.15	16.56
12H	4H	13.20	13.61	14.24	14.65	16.00	12.85	13.25	13.89	14.29	15.65
	6H	13.88	14.20	14.93	15.26	16.63	13.53	13.85	14.58	14.90	16.27
	8H	14.12	14.41	15.18	15.45	16.87	13.76	14.05	14.82	15.10	16.51