

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: P916444

Luminaire Tested: DFN2DIP-HX4F0-100D090US930-FLLFLL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P916444
REPORT IS A COMBINATION OF REPORTS P899401 AND P896188
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-HX4F0-100D090US930-FLLFLL
Description: 4 foot, Hexagon Define Geo, with Direct Frosted Lens, Indirect Frosted Lens
Light Source: -
Ballast/Driver: -

Summary

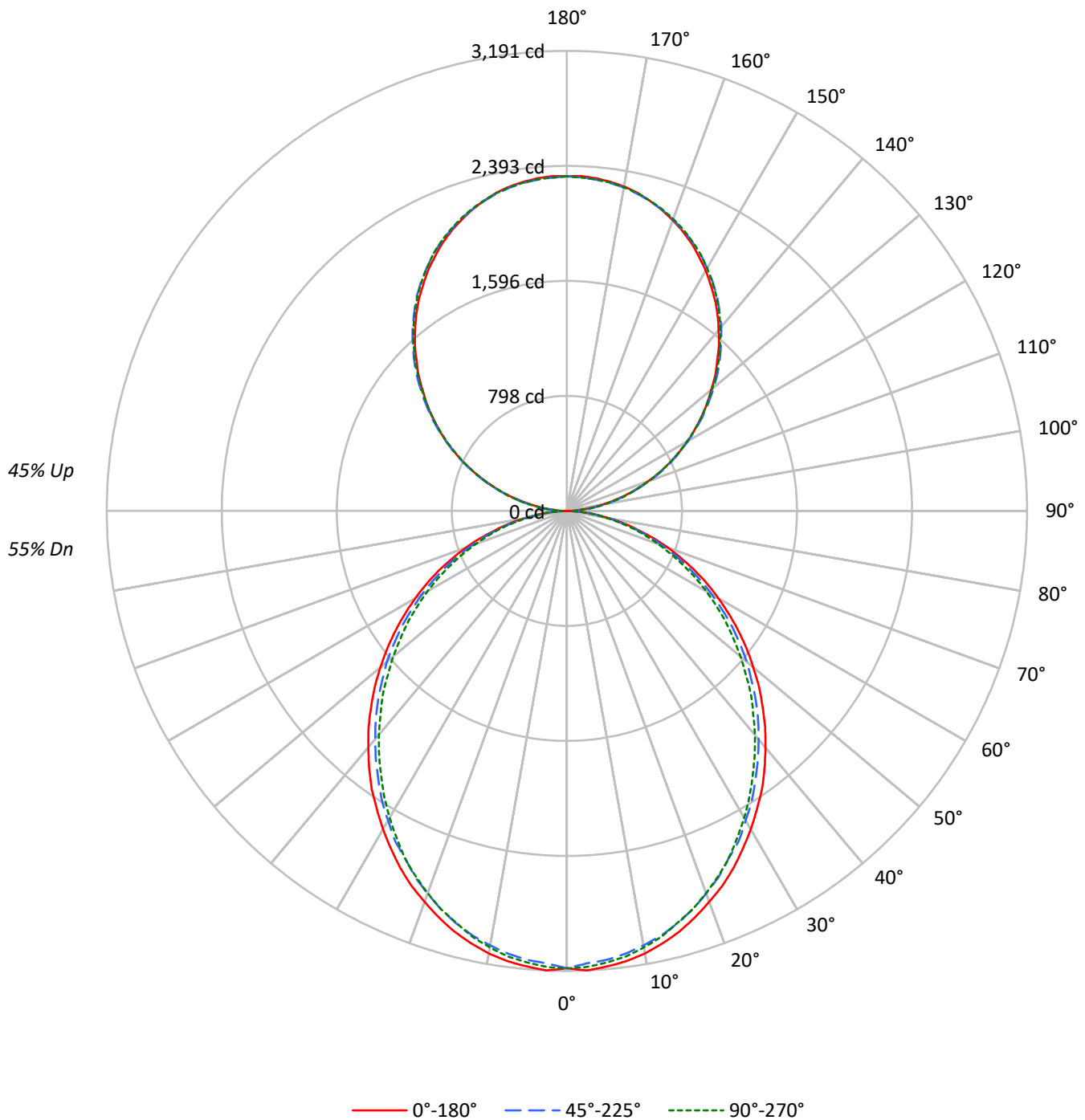
Lumens per Lamp: N/A
Luminaire Lumens: 14565.3 lumens
Efficiency: N/A
Efficacy: 96.8 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.54' x L: 4.09' x H: 0.1')
CIE Type: General Diffuse

Input Watts (W): 150.4
Input Voltage (V):
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.946
Total Harmonic Distortion (THDi): 0.132
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				0
RW	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	0			
RCR																					
0	108	108	108	108	101	101	101	101	86	86	86	73	73	73	61	61	61	55			
1	99	95	91	87	92	88	85	82	76	73	71	64	63	61	54	53	52	47			
2	90	83	76	71	83	77	72	67	66	62	59	57	54	51	48	45	43	39			
3	82	73	65	59	76	68	61	56	59	54	49	50	46	43	42	39	37	33			
4	75	64	56	50	70	60	53	48	52	47	42	45	40	37	38	35	32	28			
5	69	57	49	43	64	54	46	41	47	41	36	40	36	32	34	31	28	25			
6	64	52	43	37	59	48	41	36	42	36	32	36	32	28	31	27	25	22			
7	59	47	39	33	55	44	36	31	38	32	28	33	28	25	28	25	22	19			
8	55	42	34	29	51	40	33	28	35	29	25	30	26	22	26	22	20	17			
9	51	39	31	26	47	36	29	25	32	26	22	28	23	20	24	20	18	16			
10	48	35	28	23	44	33	27	22	29	24	20	26	21	18	22	19	16	14			

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	2359	2359	2359
5°	2363	2326	2342
10°	2344	2295	2310
15°	2310	2258	2261
20°	2263	2205	2210
25°	2217	2143	2152
30°	2159	2085	2077
35°	2104	2016	1998
40°	2037	1947	1923
45°	1970	1877	1847
50°	1896	1804	1758
55°	1819	1720	1677
60°	1732	1619	1583
65°	1637	1516	1473
70°	1516	1390	1354
75°	1349	1238	1245
80°	1148	1046	1036
85°	833	713	689

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 1970 cd/sqm

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	298.6	2.0
10°-20°	840.1	5.8
20°-30°	1234.6	8.5
30°-40°	1433.9	9.8
40°-50°	1432.1	9.8
50°-60°	1248.8	8.6
60°-70°	923.1	6.3
70°-80°	522.3	3.6
80°-90°	144.4	1.0
90°-100°	143.6	1.0
100°-110°	456.3	3.1
110°-120°	780.8	5.4
120°-130°	1026.9	7.1
130°-140°	1152.6	7.9
140°-150°	1130.3	7.8
150°-160°	948.2	6.5
160°-170°	628.8	4.3
170°-180°	219.8	1.5
0°-30°	2373.3	16.3
0°-40°	3807.2	26.1
0°-60°	6488.2	44.5
0°-90°	8078.0	55.5
90°-120°	1380.7	9.5
90°-150°	4690.5	32.2
90°-180°	6487.0	44.5
0°-180°	14565.3	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	3172	3172	3172	3172	3172	
5°	3172	3160	3127	3151	3145	301
15°	3020	3002	2962	2974	2959	851
25°	2733	2709	2657	2663	2657	1258
35°	2358	2328	2279	2260	2245	1473
45°	1919	1898	1852	1818	1806	1481
55°	1452	1434	1397	1361	1345	1298
65°	979	961	930	903	888	968
75°	512	506	491	473	479	547
85°	125	122	119	110	107	139
90°	2	25	69	64	66	14
95°	102	122	125	125	122	114
105°	421	427	431	434	434	444
115°	784	795	791	789	784	775
125°	1140	1157	1152	1145	1143	1018
135°	1474	1496	1500	1498	1492	1139
145°	1790	1804	1815	1817	1809	1118
155°	2046	2052	2058	2068	2062	942
165°	2226	2224	2224	2238	2228	628
175°	2316	2311	2307	2321	2309	220
180°	2321	2321	2321	2321	2321	

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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	3172.4	3172.4	3172.4	3172.4	3172.4
2.5°	3190.8	3175.6	3141.9	3172.4	3166.5
5°	3172.4	3160.4	3126.8	3151.0	3145.2
7.5°	3151.0	3132.9	3099.2	3123.8	3117.7
10°	3117.7	3096.3	3059.7	3084.0	3075.0
12.5°	3071.7	3053.6	3017.0	3032.3	3026.1
15°	3019.9	3001.8	2962.0	2974.3	2959.1
17.5°	2955.9	2937.8	2897.9	2913.1	2897.9
20°	2885.6	2867.5	2824.8	2833.8	2821.8
22.5°	2815.7	2788.2	2748.4	2748.4	2742.3
25°	2733.2	2708.9	2657.1	2662.9	2657.1
27.5°	2641.6	2620.2	2580.7	2571.7	2556.4
30°	2550.3	2525.7	2480.1	2471.0	2458.7
32.5°	2452.6	2434.5	2385.6	2367.1	2354.8
35°	2358.1	2327.7	2278.8	2260.3	2245.1
37.5°	2251.3	2223.7	2174.9	2153.5	2138.3
40°	2141.5	2116.9	2068.1	2040.9	2028.6
42.5°	2034.7	2010.1	1961.6	1930.9	1912.8
45°	1918.9	1897.5	1851.5	1818.2	1806.0
47.5°	1806.0	1784.6	1735.7	1702.0	1683.9
50°	1686.9	1671.6	1628.9	1586.2	1571.0
52.5°	1571.0	1549.6	1510.1	1476.5	1455.1
55°	1452.2	1433.8	1397.2	1360.6	1345.4
57.5°	1333.1	1317.8	1278.1	1241.5	1229.2
60°	1214.0	1202.0	1159.3	1125.6	1116.6
62.5°	1098.1	1076.8	1046.4	1015.9	1003.6
65°	979.3	960.9	930.5	902.9	887.8
67.5°	857.4	841.8	814.6	793.3	781.0
70°	744.4	732.1	704.6	683.2	671.2
72.5°	628.5	616.2	601.0	579.7	570.5
75°	512.3	506.5	491.0	472.9	479.0
77.5°	408.8	396.5	390.3	381.2	372.2
80°	305.2	302.0	295.8	286.7	280.6
82.5°	207.5	207.5	204.6	192.2	192.2
85°	124.9	122.1	119.1	109.7	106.8
87.5°	55.0	48.8	42.7	33.7	30.4
90°	2.1	25.2	68.6	64.3	66.4
92.5°	43.4	58.8	60.9	62.9	62.9
95°	102.2	121.7	125.2	125.2	121.7
97.5°	170.0	188.2	195.9	195.9	195.9
100°	248.3	264.5	270.0	270.0	268.0
102.5°	330.9	342.8	350.5	352.6	350.5
105°	421.2	426.7	431.0	434.5	434.5
107.5°	510.7	519.1	519.1	520.5	510.7
110°	597.5	608.7	608.7	608.7	603.1



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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	691.2	703.1	701.0	695.4	691.2
115°	783.6	794.8	791.2	789.2	783.6
117.5°	875.2	890.6	880.8	875.2	869.6
120°	967.6	982.9	967.6	967.6	961.2
122.5°	1051.5	1071.1	1061.4	1055.7	1051.5
125°	1139.7	1157.2	1151.6	1145.2	1143.2
127.5°	1225.7	1247.4	1239.7	1231.3	1225.7
130°	1306.2	1331.4	1327.9	1323.6	1316.0
132.5°	1396.4	1416.0	1417.4	1407.6	1402.1
135°	1474.1	1495.7	1500.0	1497.9	1492.3
137.5°	1560.8	1578.3	1581.8	1580.5	1572.1
140°	1637.1	1654.6	1664.3	1664.3	1656.7
142.5°	1715.5	1732.9	1738.5	1740.7	1732.9
145°	1789.7	1803.6	1814.8	1816.9	1809.2
147.5°	1856.1	1873.6	1882.0	1885.5	1877.8
150°	1924.7	1936.6	1944.2	1950.5	1944.2
152.5°	1985.5	1997.4	2007.2	2014.9	2007.2
155°	2046.4	2051.9	2058.3	2068.1	2061.8
157.5°	2098.8	2103.1	2106.6	2120.5	2110.7
160°	2145.7	2149.9	2152.1	2163.9	2155.5
162.5°	2189.1	2189.1	2191.2	2204.5	2194.7
165°	2226.2	2224.1	2224.1	2238.1	2228.3
167.5°	2259.8	2253.5	2253.5	2267.4	2257.6
170°	2285.0	2279.3	2277.3	2291.2	2279.3
172.5°	2302.4	2296.9	2294.7	2308.8	2296.9
175°	2316.4	2310.8	2306.6	2320.7	2308.8
177.5°	2324.1	2318.5	2314.3	2326.2	2314.3
180°	2320.7	2320.7	2320.7	2320.7	2320.7

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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	10.74	11.66	11.65	12.58	13.77	10.31	11.22	11.22	12.15	13.34
	3H	12.41	13.23	13.33	14.16	15.38	11.94	12.75	12.86	13.69	14.91
	4H	13.00	13.77	13.93	14.72	15.94	12.53	13.30	13.46	14.24	15.47
	6H	13.40	14.12	14.35	15.06	16.30	12.93	13.64	13.87	14.59	15.83
	8H	13.51	14.19	14.46	15.15	16.39	13.03	13.71	13.99	14.68	15.91
	12H	13.56	14.21	14.52	15.17	16.43	13.08	13.72	14.04	14.68	15.94
4H	2H	11.21	11.99	12.15	12.93	14.15	10.87	11.64	11.81	12.58	13.81
	3H	13.08	13.73	14.03	14.70	15.94	12.69	13.34	13.64	14.31	15.55
	4H	13.80	14.39	14.76	15.36	16.62	13.39	13.99	14.36	14.95	16.22
	6H	14.32	14.83	15.29	15.82	17.08	13.91	14.42	14.88	15.41	16.67
	8H	14.47	14.95	15.45	15.93	17.21	14.06	14.53	15.03	15.52	16.80
	12H	14.55	14.98	15.54	15.98	17.26	14.12	14.55	15.12	15.55	16.84
8H	4H	14.00	14.48	14.98	15.46	16.74	13.64	14.12	14.62	15.10	16.38
	6H	14.64	15.03	15.64	16.06	17.33	14.27	14.67	15.27	15.69	16.97
	8H	14.86	15.21	15.87	16.22	17.51	14.49	14.84	15.50	15.85	17.14
	12H	14.99	15.30	16.01	16.31	17.65	14.61	14.91	15.62	15.92	17.26
12H	4H	13.99	14.42	14.98	15.42	16.70	13.64	14.07	14.63	15.07	16.35
	6H	14.67	15.02	15.68	16.03	17.32	14.32	14.66	15.32	15.68	16.97
	8H	14.91	15.22	15.93	16.23	17.57	14.56	14.86	15.57	15.87	17.21