

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: P913735

Luminaire Tested: DFN2DIP-HX4F0-110D090US927-RLLFLL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P913735
REPORT IS A COMBINATION OF REPORTS P899404 AND P896188
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-HX4F0-110D090US927-RLLFLL
Description: 4 foot, Hexagon Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Frosted Lens
Light Source: -
Ballast/Driver: -

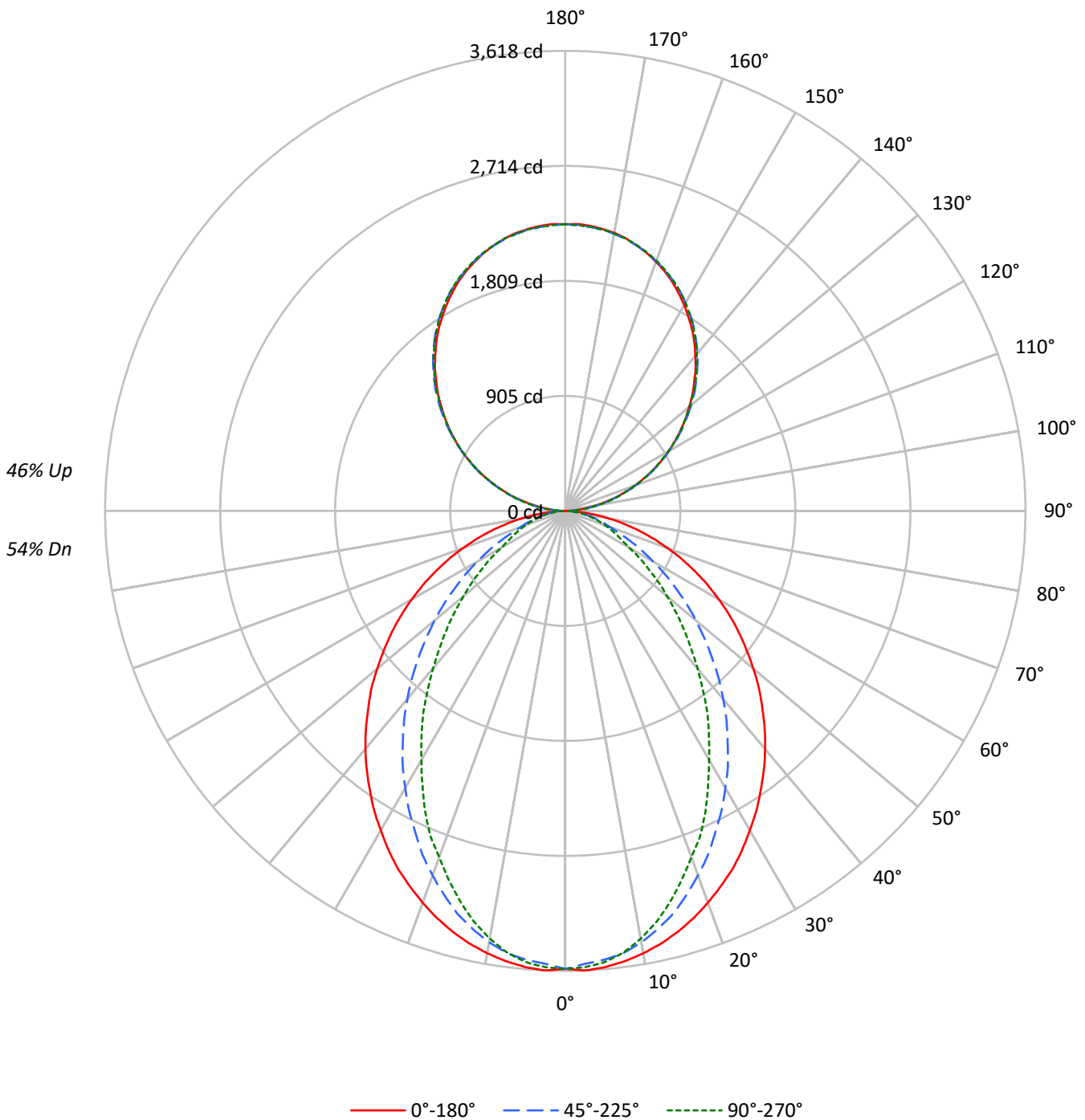
Summary

Lumens per Lamp: N/A
Luminaire Lumens: 13716.7 lumens
Efficiency: N/A
Efficacy: 84.0 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16
Luminous Opening: Rectangular w/ Sides (W: 3.54' x L: 4.09' x H: 0.1')
CIE Type: General Diffuse

Input Watts (W): 163.3
Input Voltage (V):
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.9967
Total Harmonic Distortion (THDi): 0.063
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	50	30	10
RCR																				
0	108	108	108	108	100	100	100	100	86	86	86	72	72	72	60	60	60	54	54	54
1	99	95	91	88	92	88	85	82	76	73	71	64	63	61	54	53	52	47	47	47
2	91	84	78	73	84	78	73	68	67	63	60	57	54	52	48	46	44	40	40	40
3	83	74	67	61	77	69	63	58	60	55	51	51	47	45	43	40	38	34	34	34
4	76	66	58	52	71	62	55	49	53	48	44	46	42	39	39	36	33	30	30	30
5	70	59	51	45	65	55	48	43	48	42	38	41	37	34	35	32	29	26	26	26
6	65	53	45	39	60	50	43	38	43	38	34	38	33	30	32	29	26	23	23	23
7	60	48	40	35	56	45	38	33	40	34	30	34	30	27	29	26	23	21	21	21
8	56	44	36	31	52	41	34	30	36	31	27	32	27	24	27	24	21	19	19	19
9	52	40	33	28	49	38	31	27	33	28	24	29	25	22	25	22	19	17	17	17
10	49	37	30	25	45	35	28	24	31	26	22	27	23	20	23	20	18	16	16	16

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	2678	2678	2678
5°	2682	2636	2652
10°	2656	2584	2566
15°	2620	2499	2433
20°	2572	2382	2269
25°	2522	2250	2111
30°	2456	2115	1911
35°	2391	1969	1735
40°	2325	1819	1533
45°	2248	1652	1350
50°	2169	1484	1171
55°	2086	1304	999
60°	1990	1115	823
65°	1880	924	741
70°	1746	745	670
75°	1579	658	610
80°	1335	553	530
85°	934	370	399

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°
 Vertical Angle: 45°
 Luminance: 2248 cd/sqm



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	337.5	2.5
10°-20°	926.6	6.8
20°-30°	1300.9	9.5
30°-40°	1418.1	10.3
40°-50°	1303.4	9.5
50°-60°	1023.6	7.5
60°-70°	666.3	4.9
70°-80°	343.0	2.5
80°-90°	94.0	0.7
90°-100°	139.5	1.0
100°-110°	443.3	3.2
110°-120°	758.7	5.5
120°-130°	997.8	7.3
130°-140°	1120.0	8.2
140°-150°	1098.2	8.0
150°-160°	921.3	6.7
160°-170°	611.0	4.5
170°-180°	213.5	1.6
0°-30°	2565.1	18.7
0°-40°	3983.1	29.0
0°-60°	6310.1	46.0
0°-90°	7413.3	54.0
90°-120°	1341.5	9.8
90°-150°	4557.5	33.2
90°-180°	6303.0	46.0
0°-180°	13716.7	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	3602	3602	3602	3602	3602	
5°	3602	3585	3543	3572	3562	341
15°	3426	3390	3279	3217	3184	965
25°	3109	3005	2790	2656	2607	1430
35°	2679	2513	2226	2021	1949	1677
45°	2190	1972	1630	1398	1320	1691
55°	1665	1411	1059	864	802	1488
65°	1124	860	567	456	446	1115
75°	600	371	261	238	235	634
85°	140	72	62	62	62	161
90°	2	24	67	62	65	13
95°	99	118	122	122	118	110
105°	409	415	419	422	422	432
115°	761	772	769	767	761	753
125°	1107	1124	1119	1113	1111	990
135°	1432	1453	1458	1455	1450	1107
145°	1739	1752	1763	1765	1758	1086
155°	1988	1994	2000	2009	2003	915
165°	2163	2161	2161	2175	2165	610
175°	2251	2245	2241	2255	2243	214
180°	2255	2255	2255	2255	2255	



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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	3601.5	3601.5	3601.5	3601.5	3601.5
2.5°	3617.7	3601.5	3565.5	3598.4	3591.8
5°	3601.5	3585.3	3542.7	3572.1	3562.4
7.5°	3572.1	3552.7	3507.1	3519.9	3503.6
10°	3533.0	3510.2	3445.2	3435.1	3415.8
12.5°	3484.3	3454.9	3366.7	3347.3	3311.3
15°	3425.5	3389.5	3278.8	3217.0	3184.4
17.5°	3357.0	3304.8	3167.9	3096.2	3044.0
20°	3278.8	3213.5	3050.6	2969.3	2897.4
22.5°	3194.2	3119.1	2930.0	2819.3	2770.5
25°	3109.4	3005.0	2789.9	2656.4	2607.3
27.5°	3008.5	2897.4	2659.5	2506.3	2431.3
30°	2900.9	2776.8	2516.0	2350.0	2261.8
32.5°	2796.5	2646.4	2379.4	2183.7	2102.1
35°	2679.2	2512.9	2226.3	2020.9	1948.9
37.5°	2565.2	2385.7	2082.7	1857.6	1776.4
40°	2444.4	2249.1	1932.7	1701.3	1616.6
42.5°	2320.6	2112.1	1783.0	1541.6	1460.3
45°	2190.3	1971.7	1629.8	1398.0	1319.9
47.5°	2066.5	1835.2	1483.1	1251.4	1179.9
50°	1929.5	1698.2	1339.7	1114.5	1046.4
52.5°	1795.7	1551.2	1202.7	987.6	925.7
55°	1665.3	1411.2	1059.1	863.8	801.9
57.5°	1531.9	1271.1	932.2	749.7	697.4
60°	1395.0	1134.2	798.4	632.5	580.3
62.5°	1261.5	1000.8	684.4	528.1	502.1
65°	1124.5	860.3	567.1	456.5	446.4
67.5°	994.2	730.0	456.5	400.8	391.1
70°	857.2	603.1	377.9	345.5	332.3
72.5°	726.8	485.5	316.1	290.1	283.5
75°	599.6	371.4	260.7	237.9	234.8
77.5°	472.7	263.9	205.4	192.3	185.7
80°	355.1	189.2	156.3	143.5	143.5
82.5°	247.6	127.2	107.6	101.0	101.0
85°	140.1	71.6	61.9	61.9	61.9
87.5°	52.2	25.9	25.9	22.8	22.8
90°	2.1	24.5	66.6	62.5	64.6
92.5°	42.1	57.1	59.2	61.2	61.2
95°	99.3	118.3	121.7	121.7	118.3
97.5°	165.2	182.8	190.4	190.4	190.4
100°	241.3	257.0	262.4	262.4	260.4
102.5°	321.5	333.1	340.6	342.6	340.6
105°	409.2	414.6	418.7	422.2	422.2
107.5°	496.2	504.4	504.4	505.7	496.2
110°	580.5	591.4	591.4	591.4	586.0



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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	671.6	683.2	681.1	675.7	671.6
115°	761.4	772.2	768.8	766.8	761.4
117.5°	850.4	865.4	855.9	850.4	844.9
120°	940.2	955.1	940.2	940.2	934.0
122.5°	1021.7	1040.8	1031.3	1025.8	1021.7
125°	1107.4	1124.3	1119.0	1112.8	1110.8
127.5°	1191.0	1212.0	1204.6	1196.4	1191.0
130°	1269.2	1293.6	1290.2	1286.1	1278.7
132.5°	1356.8	1375.9	1377.2	1367.7	1362.3
135°	1432.3	1453.3	1457.5	1455.4	1450.0
137.5°	1516.6	1533.6	1537.0	1535.6	1527.5
140°	1590.7	1607.7	1617.2	1617.2	1609.7
142.5°	1666.8	1683.8	1689.2	1691.3	1683.8
145°	1738.9	1752.5	1763.3	1765.4	1757.9
147.5°	1803.5	1820.4	1828.6	1832.0	1824.6
150°	1870.1	1881.7	1889.1	1895.2	1889.1
152.5°	1929.2	1940.8	1950.3	1957.8	1950.3
155°	1988.4	1993.8	1999.9	2009.4	2003.3
157.5°	2039.3	2043.4	2046.8	2060.4	2050.9
160°	2084.9	2089.0	2091.0	2102.5	2094.4
162.5°	2127.0	2127.0	2129.1	2142.0	2132.5
165°	2163.1	2161.0	2161.0	2174.6	2165.1
167.5°	2195.7	2189.6	2189.6	2203.1	2193.6
170°	2220.2	2214.7	2212.7	2226.3	2214.7
172.5°	2237.1	2231.7	2229.7	2243.3	2231.7
175°	2250.7	2245.3	2241.2	2254.9	2243.3
177.5°	2258.2	2252.8	2248.7	2260.3	2248.7
180°	2254.9	2254.9	2254.9	2254.9	2254.9



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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	10.94	11.80	11.87	12.75	13.96	6.91	7.78	7.84	8.72	9.93
	3H	12.62	13.39	13.56	14.34	15.58	8.11	8.88	9.05	9.83	11.07
	4H	13.23	13.96	14.19	14.92	16.16	8.56	9.29	9.51	10.24	11.49
	6H	13.66	14.33	14.62	15.29	16.55	8.88	9.56	9.85	10.52	11.78
	8H	13.78	14.42	14.76	15.40	16.66	8.98	9.61	9.95	10.59	11.85
	12H	13.85	14.45	14.82	15.43	16.71	9.02	9.63	10.00	10.60	11.88
4H	2H	10.96	11.69	11.92	12.65	13.90	7.51	8.24	8.47	9.20	10.45
	3H	12.80	13.40	13.77	14.39	15.65	8.87	9.47	9.84	10.46	11.72
	4H	13.49	14.04	14.47	15.02	16.31	9.42	9.97	10.40	10.95	12.24
	6H	14.01	14.48	15.00	15.49	16.77	9.84	10.32	10.83	11.32	12.61
	8H	14.18	14.63	15.18	15.62	16.92	9.97	10.42	10.96	11.41	12.71
	12H	14.28	14.68	15.29	15.69	17.00	10.04	10.44	11.05	11.45	12.76
8H	4H	13.46	13.91	14.45	14.90	16.20	9.70	10.15	10.69	11.14	12.44
	6H	14.03	14.40	15.05	15.43	16.73	10.22	10.59	11.24	11.63	12.93
	8H	14.25	14.57	15.27	15.60	16.91	10.42	10.74	11.44	11.77	13.08
	12H	14.39	14.67	15.42	15.69	17.05	10.54	10.82	11.57	11.84	13.20
12H	4H	13.41	13.81	14.42	14.83	16.13	9.71	10.11	10.72	11.12	12.43
	6H	14.00	14.33	15.03	15.35	16.67	10.27	10.60	11.30	11.62	12.94
	8H	14.23	14.51	15.26	15.53	16.89	10.49	10.77	11.52	11.79	13.15