

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: P913716

Luminaire Tested: DFN2DIP-HX4F0-100D090US927-FLLFLL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P913716
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-HX4F0-100D090US927-FLLFLL
Description: 4 foot, Hexagon Define Geo, with Direct Frosted Lens, Indirect Frosted Lens
Light Source: -
Ballast/Driver: -

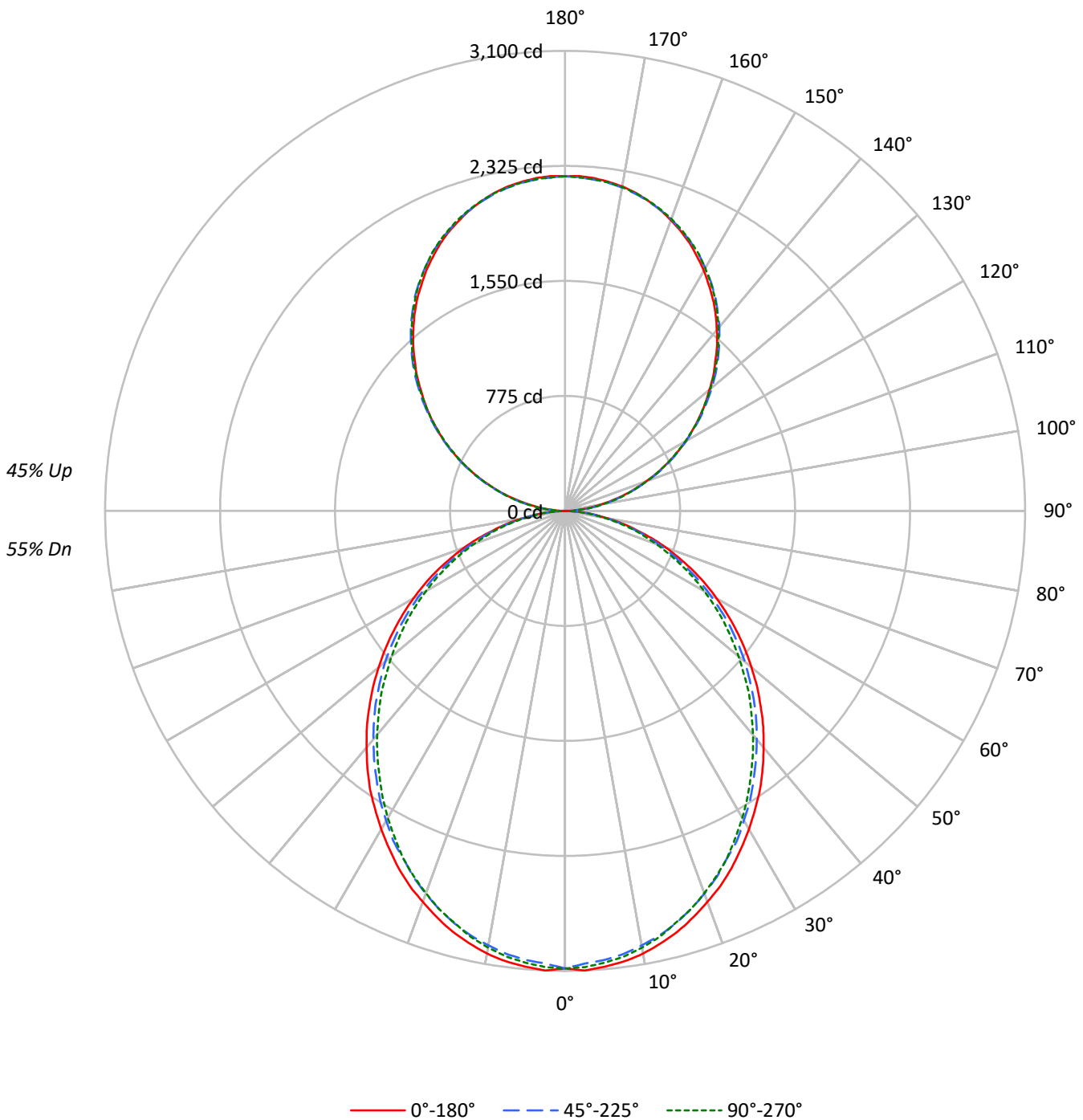
Summary

Lumens per Lamp: N/A
Luminaire Lumens: 14152.3 lumens
Efficiency: N/A
Efficacy: 94.1 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				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	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°	2292	2292	2292
5°	2296	2260	2275
10°	2277	2230	2245
15°	2244	2194	2197
20°	2199	2143	2147
25°	2154	2082	2091
30°	2098	2025	2018
35°	2045	1959	1942
40°	1979	1891	1869
45°	1914	1824	1795
50°	1842	1753	1708
55°	1767	1671	1629
60°	1683	1574	1538
65°	1591	1473	1431
70°	1473	1350	1316
75°	1311	1203	1210
80°	1115	1016	1006
85°	809	692	669

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°
 Vertical Angle: 45°
 Luminance: 1914 cd/sqm



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	290.1	2.0
10°-20°	816.3	5.8
20°-30°	1199.6	8.5
30°-40°	1393.3	9.8
40°-50°	1391.5	9.8
50°-60°	1213.4	8.6
60°-70°	897.0	6.3
70°-80°	507.5	3.6
80°-90°	140.4	1.0
90°-100°	139.5	1.0
100°-110°	443.3	3.1
110°-120°	758.7	5.4
120°-130°	997.8	7.1
130°-140°	1120.0	7.9
140°-150°	1098.2	7.8
150°-160°	921.3	6.5
160°-170°	611.0	4.3
170°-180°	213.5	1.5
0°-30°	2306.0	16.3
0°-40°	3699.3	26.1
0°-60°	6304.2	44.5
0°-90°	7849.0	55.5
90°-120°	1341.5	9.5
90°-150°	4557.5	32.2
90°-180°	6303.0	44.5
0°-180°	14152.3	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	3082	3082	3082	3082	3082	
5°	3082	3071	3038	3062	3056	293
15°	2934	2917	2878	2890	2875	826
25°	2656	2632	2582	2587	2582	1222
35°	2291	2262	2214	2196	2181	1431
45°	1864	1844	1799	1767	1755	1439
55°	1411	1393	1358	1322	1307	1262
65°	952	934	904	877	863	941
75°	498	492	477	460	465	531
85°	121	119	116	107	104	135
90°	2	24	67	62	65	14
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°	3082.5	3082.5	3082.5	3082.5	3082.5
2.5°	3100.4	3085.5	3052.8	3082.5	3076.8
5°	3082.5	3070.8	3038.1	3061.7	3056.0
7.5°	3061.7	3044.0	3011.3	3035.2	3029.3
10°	3029.3	3008.5	2973.0	2996.6	2987.8
12.5°	2984.6	2967.0	2931.5	2946.3	2940.3
15°	2934.3	2916.7	2878.0	2890.0	2875.2
17.5°	2872.1	2854.5	2815.7	2830.5	2815.7
20°	2803.8	2786.2	2744.7	2753.5	2741.8
22.5°	2735.9	2709.2	2670.4	2670.4	2664.5
25°	2655.7	2632.1	2581.8	2587.4	2581.8
27.5°	2566.7	2545.9	2507.6	2498.8	2484.0
30°	2478.0	2454.1	2409.7	2400.9	2389.0
32.5°	2383.0	2365.5	2317.9	2300.0	2288.1
35°	2291.2	2261.7	2214.1	2196.2	2181.4
37.5°	2187.4	2160.7	2113.2	2092.5	2077.7
40°	2080.8	2056.9	2009.4	1983.1	1971.1
42.5°	1977.0	1953.1	1906.0	1876.1	1858.5
45°	1864.5	1843.7	1799.0	1766.6	1754.8
47.5°	1754.8	1734.0	1686.5	1653.8	1636.2
50°	1639.0	1624.2	1582.7	1541.2	1526.5
52.5°	1526.5	1505.7	1467.3	1434.6	1413.9
55°	1411.0	1393.1	1357.6	1322.0	1307.3
57.5°	1295.3	1280.5	1241.8	1206.3	1194.4
60°	1179.6	1167.9	1126.4	1093.7	1084.9
62.5°	1067.0	1046.2	1016.7	987.1	975.2
65°	951.6	933.7	904.1	877.3	862.6
67.5°	833.1	817.9	791.5	770.8	758.8
70°	723.3	711.3	684.6	663.8	652.2
72.5°	610.7	598.7	584.0	563.2	554.4
75°	497.8	492.2	477.1	459.5	465.4
77.5°	397.2	385.2	379.2	370.4	361.6
80°	296.5	293.4	287.4	278.6	272.7
82.5°	201.6	201.6	198.8	186.8	186.8
85°	121.4	118.6	115.7	106.6	103.8
87.5°	53.5	47.5	41.5	32.7	29.5
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	10.64	11.56	11.55	12.48	13.67	10.21	11.12	11.12	12.05	13.24
	3H	12.31	13.13	13.23	14.06	15.28	11.84	12.65	12.76	13.59	14.81
	4H	12.90	13.67	13.83	14.62	15.84	12.43	13.20	13.36	14.14	15.37
	6H	13.30	14.02	14.25	14.96	16.20	12.83	13.54	13.77	14.49	15.73
	8H	13.41	14.09	14.36	15.05	16.29	12.93	13.61	13.89	14.58	15.81
	12H	13.46	14.11	14.42	15.07	16.33	12.98	13.63	13.94	14.58	15.85
4H	2H	11.11	11.89	12.05	12.83	14.05	10.77	11.54	11.71	12.48	13.71
	3H	12.98	13.63	13.93	14.60	15.84	12.59	13.24	13.54	14.21	15.45
	4H	13.70	14.29	14.66	15.26	16.52	13.29	13.89	14.26	14.85	16.12
	6H	14.22	14.73	15.19	15.72	16.98	13.81	14.32	14.78	15.31	16.57
	8H	14.37	14.85	15.35	15.83	17.11	13.96	14.43	14.93	15.42	16.70
	12H	14.45	14.88	15.44	15.88	17.16	14.02	14.45	15.02	15.45	16.74
8H	4H	13.90	14.38	14.88	15.36	16.64	13.54	14.02	14.52	15.00	16.28
	6H	14.54	14.93	15.54	15.96	17.23	14.17	14.57	15.17	15.59	16.87
	8H	14.76	15.11	15.77	16.12	17.41	14.39	14.74	15.40	15.75	17.04
	12H	14.89	15.20	15.91	16.21	17.55	14.51	14.81	15.52	15.82	17.16
12H	4H	13.89	14.32	14.88	15.32	16.60	13.54	13.97	14.53	14.97	16.25
	6H	14.57	14.92	15.58	15.93	17.22	14.22	14.56	15.22	15.58	16.87
	8H	14.81	15.12	15.83	16.13	17.47	14.46	14.76	15.47	15.77	17.11