

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: P916337

Luminaire Tested: DFN2DIP-HX4F0-040D090US930-RLLFLL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P916337
REPORT IS A COMBINATION OF REPORTS P899390 AND P896188
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-HX4F0-040D090US930-RLLFLL
Description: 4 foot, Hexagon Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Frosted Lens
Light Source: -
Ballast/Driver: -

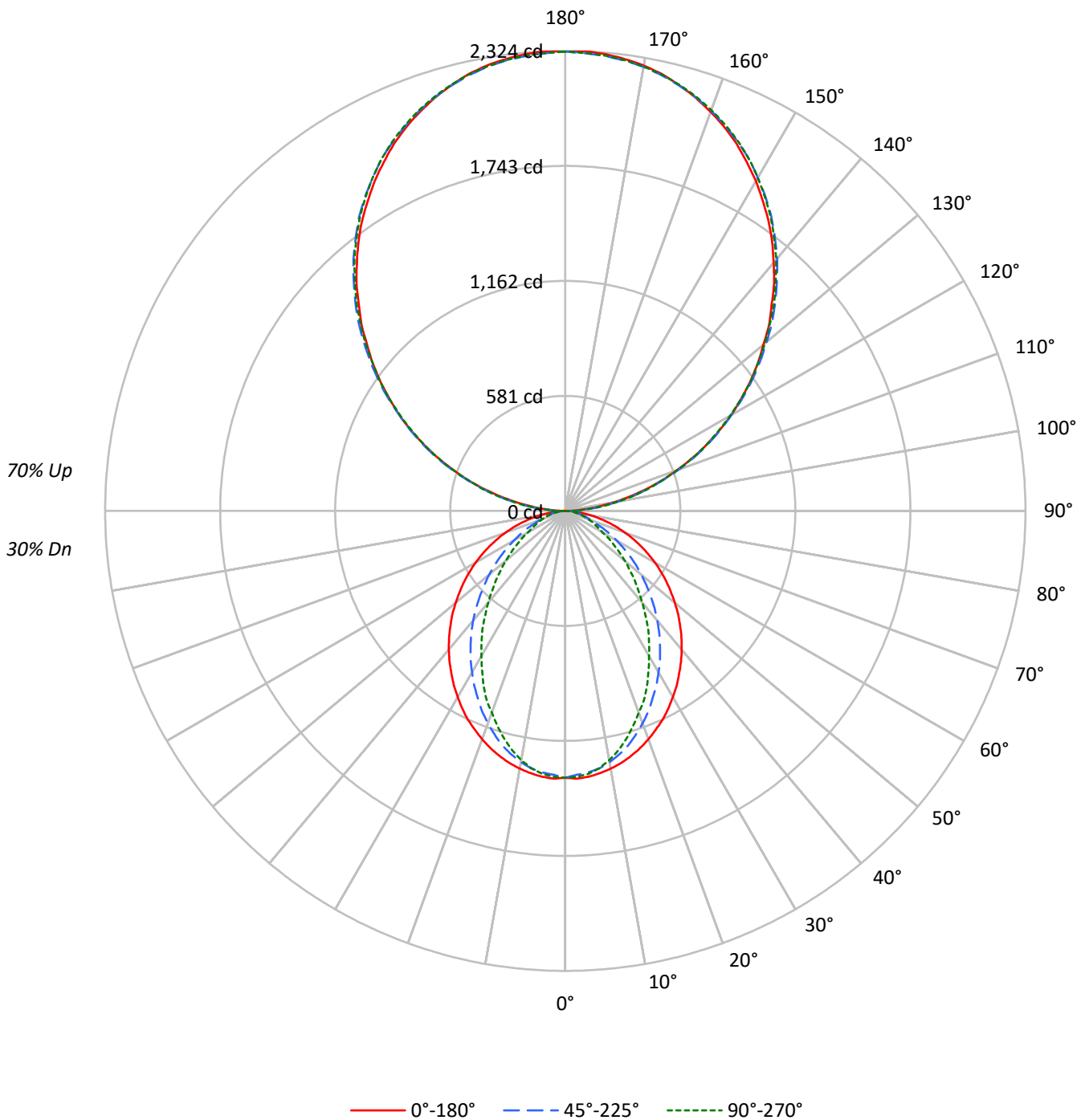
Summary

Lumens per Lamp: N/A
Luminaire Lumens: 9265.8 lumens
Efficiency: N/A
Efficacy: 109.9 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: Semi-Indirect

Input Watts (W): 84.3
Input Voltage (V):
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.9977
Total Harmonic Distortion (THDi): 0.049
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 24 FT

TEST NUMBER: P916337
CATALOG NUMBER: DFN2DIP-HX4F0-040D090US930-RLFL

Luminous Intensity Polar Plot





TEST NUMBER: P916337

CATALOG NUMBER: DFN2DIP-HX4F0-040D090US930-RLFL

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	102	102	102	102	92	92	92	92	72	72	72	54	54	54	38	38	38	38	38	38	38
1	94	89	86	83	84	80	77	75	64	62	60	48	47	46	34	33	32	34	33	32	26
2	85	78	73	68	76	71	66	62	56	53	50	43	40	38	30	29	28	30	29	28	22
3	78	69	62	57	70	62	57	52	50	46	42	38	35	33	27	25	24	27	25	24	19
4	71	61	54	48	64	55	49	44	44	40	36	34	31	28	24	22	21	24	22	21	17
5	66	55	47	41	59	49	43	38	40	35	31	30	27	25	22	20	18	22	20	18	15
6	60	49	41	36	54	44	38	33	36	31	27	28	24	22	20	18	16	20	18	16	13
7	56	44	37	31	50	40	33	29	32	27	24	25	22	19	18	16	14	18	16	14	12
8	52	40	33	28	46	36	30	25	29	25	21	23	20	17	17	15	13	17	15	13	10
9	48	36	29	25	43	33	27	23	27	22	19	21	18	15	16	13	12	16	13	12	10
10	45	33	27	22	40	30	24	20	25	20	17	19	16	14	14	12	11	14	12	11	9

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	1002	1002	1002
5°	1004	986	993
10°	994	967	960
15°	980	935	911
20°	962	891	849
25°	944	842	790
30°	919	791	715
35°	895	737	649
40°	870	681	574
45°	841	618	505
50°	812	555	438
55°	781	488	374
60°	745	417	308
65°	704	346	277
70°	654	279	251
75°	591	246	228
80°	500	207	198
85°	349	139	150

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 90°
 Vertical Angle: 90°
 Luminance: 1748 cd/sqm



TEST NUMBER: P916337

CATALOG NUMBER: DFN2DIP-HX4F0-040D090US930-RLFL

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	126.3	1.4
10°-20°	346.8	3.7
20°-30°	486.9	5.3
30°-40°	530.7	5.7
40°-50°	487.8	5.3
50°-60°	383.1	4.1
60°-70°	249.3	2.7
70°-80°	128.4	1.4
80°-90°	39.4	0.4
90°-100°	143.6	1.5
100°-110°	456.3	4.9
110°-120°	780.8	8.4
120°-130°	1026.9	11.1
130°-140°	1152.6	12.4
140°-150°	1130.3	12.2
150°-160°	948.2	10.2
160°-170°	628.8	6.8
170°-180°	219.8	2.4
0°-30°	960.0	10.4
0°-40°	1490.7	16.1
0°-60°	2361.5	25.5
0°-90°	2778.6	30.0
90°-120°	1380.7	14.9
90°-150°	4690.5	50.6
90°-180°	6487.0	70.0
0°-180°	9265.8	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	1348	1348	1348	1348	1348	
5°	1348	1342	1326	1337	1333	128
15°	1282	1268	1227	1204	1192	361
25°	1164	1125	1044	994	976	535
35°	1003	940	833	756	729	628
45°	820	738	610	523	494	633
55°	623	528	396	323	300	557
65°	421	322	212	171	167	417
75°	224	139	98	89	88	237
85°	52	27	23	23	23	60
90°	2	25	69	64	66	9
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	



TEST NUMBER: P916337

CATALOG NUMBER: DFN2DIP-HX4F0-040D090US930-RLFL

CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	1347.9	1347.9	1347.9	1347.9	1347.9
2.5°	1354.0	1347.9	1334.4	1346.7	1344.2
5°	1347.9	1341.7	1325.8	1336.8	1333.3
7.5°	1336.8	1329.6	1312.5	1317.3	1311.2
10°	1322.3	1313.7	1289.3	1285.6	1278.4
12.5°	1304.0	1293.0	1260.0	1252.7	1239.3
15°	1282.0	1268.5	1227.1	1204.0	1191.8
17.5°	1256.4	1236.8	1185.5	1158.8	1139.2
20°	1227.1	1202.6	1141.7	1111.3	1084.3
22.5°	1195.4	1167.3	1096.5	1055.1	1036.9
25°	1163.7	1124.6	1044.1	994.2	975.7
27.5°	1125.9	1084.3	995.3	938.0	909.9
30°	1085.7	1039.2	941.6	879.5	846.5
32.5°	1046.6	990.4	890.5	817.3	786.7
35°	1002.7	940.4	833.2	756.3	729.4
37.5°	960.0	892.8	779.4	695.2	664.8
40°	914.8	841.7	723.3	636.7	605.0
42.5°	868.5	790.4	667.2	576.9	546.5
45°	819.7	737.9	609.9	523.3	494.0
47.5°	773.4	686.8	555.1	468.4	441.6
50°	722.1	635.5	501.3	417.1	391.6
52.5°	672.1	580.6	450.1	369.6	346.4
55°	623.3	528.2	396.4	323.3	300.1
57.5°	573.3	475.7	348.9	280.5	261.1
60°	522.0	424.4	298.8	236.7	217.2
62.5°	472.1	374.5	256.1	197.6	187.9
65°	420.9	322.0	212.2	170.8	167.1
67.5°	372.1	273.2	170.8	150.0	146.3
70°	320.8	225.7	141.5	129.3	124.3
72.5°	272.1	181.7	118.3	108.6	106.2
75°	224.4	139.0	97.6	89.0	87.9
77.5°	176.9	98.7	76.9	72.0	69.5
80°	132.9	70.8	58.5	53.7	53.7
82.5°	92.7	47.6	40.3	37.7	37.7
85°	52.4	26.8	23.2	23.2	23.2
87.5°	19.6	9.7	9.7	8.6	8.6
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



TEST NUMBER: P916337

CATALOG NUMBER: DFN2DIP-HX4F0-040D090US930-RLFL

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



TEST NUMBER: P916337
 CATALOG NUMBER: DFN2DIP-HX4F0-040D090US930-RLLFLL

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	4.92	5.61	6.04	6.72	8.25	0.89	1.58	2.01	2.69	4.22
	3H	6.59	7.20	7.71	8.32	9.87	2.07	2.69	3.19	3.80	5.35
	4H	7.19	7.77	8.32	8.89	10.45	2.52	3.10	3.65	4.22	5.77
	6H	7.60	8.14	8.75	9.26	10.83	2.83	3.37	3.97	4.49	6.05
	8H	7.73	8.24	8.87	9.37	10.93	2.92	3.43	4.06	4.56	6.12
	12H	7.78	8.27	8.93	9.40	10.98	2.96	3.44	4.11	4.57	6.15
4H	2H	4.92	5.50	6.06	6.62	8.18	1.47	2.05	2.61	3.17	4.73
	3H	6.74	7.22	7.88	8.37	9.93	2.81	3.30	3.96	4.44	6.01
	4H	7.42	7.87	8.57	9.00	10.59	3.35	3.80	4.50	4.93	6.52
	6H	7.93	8.32	9.09	9.47	11.05	3.77	4.15	4.92	5.30	6.88
	8H	8.11	8.46	9.26	9.61	11.20	3.89	4.25	5.05	5.40	6.99
	12H	8.19	8.52	9.37	9.68	11.28	3.95	4.28	5.12	5.43	7.03
8H	4H	7.38	7.74	8.54	8.89	10.48	3.62	3.98	4.78	5.13	6.72
	6H	7.94	8.24	9.12	9.43	11.02	4.14	4.43	5.31	5.62	7.21
	8H	8.16	8.42	9.34	9.59	11.20	4.33	4.59	5.51	5.75	7.37
	12H	8.29	8.52	9.48	9.68	11.33	4.44	4.67	5.63	5.83	7.48
12H	4H	7.33	7.65	8.50	8.81	10.41	3.62	3.95	4.79	5.10	6.70
	6H	7.92	8.18	9.10	9.34	10.95	4.19	4.45	5.37	5.61	7.22
	8H	8.13	8.36	9.32	9.52	11.17	4.39	4.62	5.58	5.78	7.43