

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: P913608

Luminaire Tested: DFN2DIP-HX4F0-040D090US927-FLLFLL

Issue Date: 11/21/2024

**Test Information**

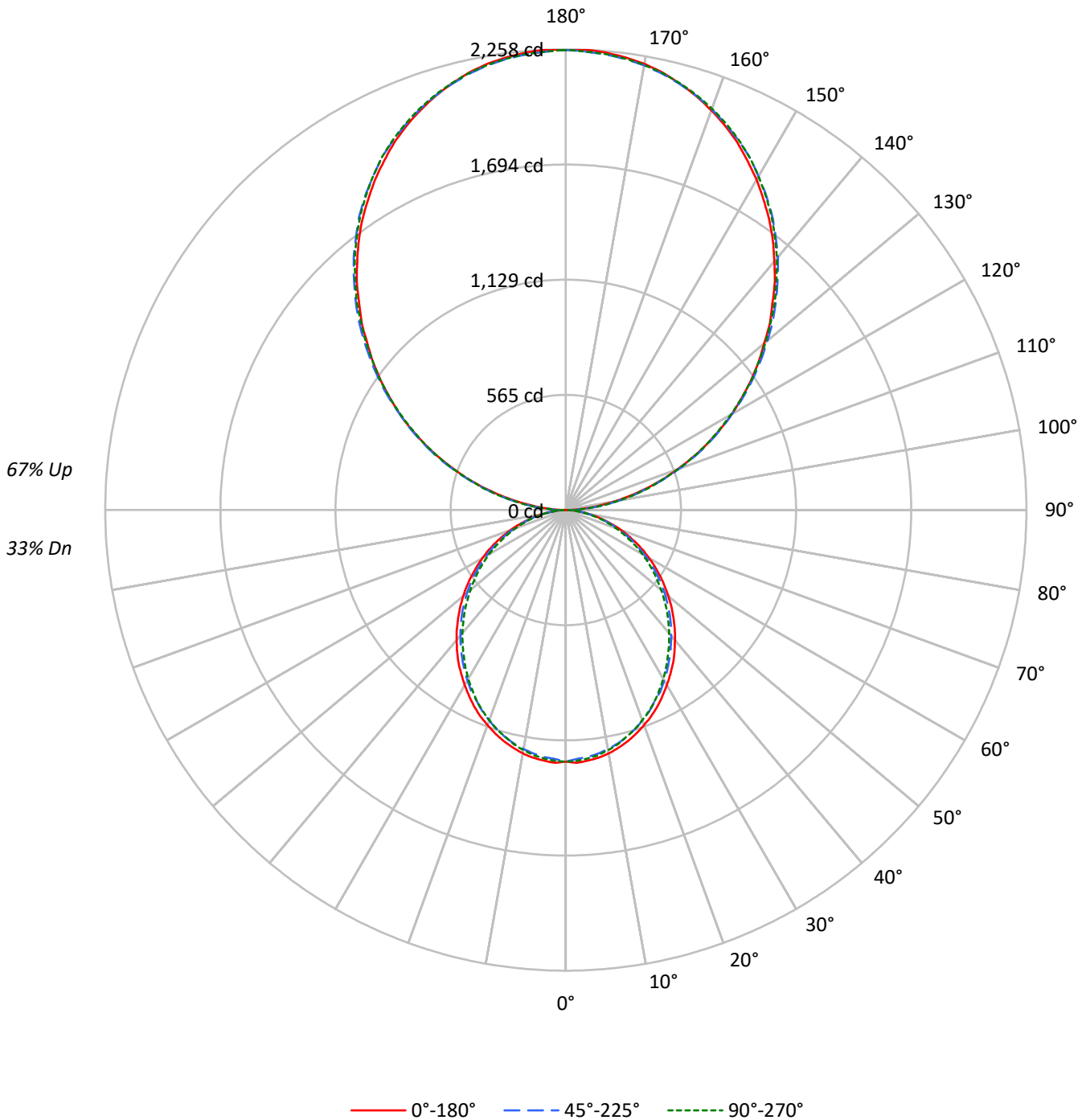
Test Method: LM-79-2019  
Report Number: P913608  
REPORT IS A COMBINATION OF REPORTS P899389 AND P896188  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-HX4F0-040D090US927-FLLFLL  
Description: 4 foot, Hexagon Define Geo, with Direct Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 9446.8 lumens  
Efficiency: N/A  
Efficacy: 112.1 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: 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: P913608  
CATALOG NUMBER: DFN2DIP-HX4F0-040D090US927-FLLFLL

### Luminous Intensity Polar Plot





TEST NUMBER: P913608

CATALOG NUMBER: DFN2DIP-HX4F0-040D090US927-FLLFLL

**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	103	103	103	103	93	93	93	93	74	74	74	57	57	57	41	41	41	33				33
1	94	90	86	83	85	81	78	75	65	63	61	50	48	47	36	35	34	28				28
2	86	78	72	67	77	71	66	62	57	53	50	44	41	39	32	30	29	23				23
3	78	69	62	56	70	62	56	51	50	46	42	39	36	33	28	26	25	20				20
4	71	61	53	47	64	55	49	43	44	40	36	34	31	28	25	23	21	17				17
5	65	54	46	40	59	49	42	37	40	35	31	31	27	25	23	20	18	15				15
6	60	48	41	35	54	44	37	32	36	31	27	28	24	21	20	18	16	13				13
7	56	44	36	30	50	40	33	28	32	27	23	25	22	19	19	16	14	12				12
8	51	39	32	27	46	36	29	25	29	24	21	23	19	17	17	15	13	10				10
9	48	36	29	24	43	33	26	22	27	22	18	21	18	15	16	13	12	9				9
10	45	33	26	21	40	30	24	20	25	20	17	19	16	14	15	12	11	8				8

**AVERAGE LUMINANCE (cd/sqm):**

	0°	45°	90°
0°	917	917	917
5°	918	904	910
10°	911	892	898
15°	898	877	879
20°	880	857	859
25°	862	833	836
30°	839	810	807
35°	818	784	777
40°	792	756	748
45°	766	730	718
50°	737	701	683
55°	707	668	652
60°	673	629	615
65°	636	589	573
70°	589	540	526
75°	524	481	484
80°	446	406	403
85°	324	277	268

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 90°  
 Vertical Angle: 90°  
 Luminance: 1701 cd/sqm



TEST NUMBER: P913608

CATALOG NUMBER: DFN2DIP-HX4F0-040D090US927-FLLFLL

**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	116.0	1.2
10°-20°	326.5	3.5
20°-30°	479.8	5.1
30°-40°	557.3	5.9
40°-50°	556.6	5.9
50°-60°	485.3	5.1
60°-70°	358.8	3.8
70°-80°	203.0	2.1
80°-90°	60.0	0.6
90°-100°	139.5	1.5
100°-110°	443.3	4.7
110°-120°	758.7	8.0
120°-130°	997.8	10.6
130°-140°	1120.0	11.9
140°-150°	1098.2	11.6
150°-160°	921.3	9.8
160°-170°	611.0	6.5
170°-180°	213.5	2.3
0°-30°	922.4	9.8
0°-40°	1479.7	15.7
0°-60°	2521.7	26.7
0°-90°	3143.4	33.3
90°-120°	1341.5	14.2
90°-150°	4557.5	48.2
90°-180°	6303.0	66.7
0°-180°	9446.8	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	1233	1233	1233	1233	1233	
5°	1233	1228	1215	1225	1222	117
15°	1174	1167	1151	1156	1150	331
25°	1062	1053	1033	1035	1033	489
35°	916	905	886	878	873	572
45°	746	738	720	707	702	576
55°	564	557	543	529	523	505
65°	381	373	362	351	345	376
75°	199	197	191	184	186	213
85°	49	48	46	43	42	54
90°	2	24	67	62	65	9
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	



TEST NUMBER: P913608

CATALOG NUMBER: DFN2DIP-HX4F0-040D090US927-FLLFLL

**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°
0°	1233.0	1233.0	1233.0	1233.0	1233.0
2.5°	1240.2	1234.2	1221.1	1233.0	1230.7
5°	1233.0	1228.3	1215.2	1224.6	1222.4
7.5°	1224.6	1217.6	1204.5	1214.1	1211.7
10°	1211.7	1203.4	1189.2	1198.6	1195.1
12.5°	1193.8	1186.8	1172.6	1178.5	1176.1
15°	1173.7	1166.6	1151.2	1156.0	1150.1
17.5°	1148.8	1141.8	1126.3	1132.2	1126.3
20°	1121.5	1114.4	1097.9	1101.4	1096.8
22.5°	1094.3	1083.6	1068.2	1068.2	1065.8
25°	1062.2	1052.8	1032.7	1035.0	1032.7
27.5°	1026.7	1018.3	1003.1	999.5	993.6
30°	991.2	981.7	963.9	960.4	955.6
32.5°	953.2	946.2	927.2	920.0	915.2
35°	916.5	904.7	885.7	878.5	872.6
37.5°	875.0	864.3	845.3	837.0	831.1
40°	832.3	822.8	803.7	793.2	788.5
42.5°	790.8	781.2	762.4	750.4	743.4
45°	745.8	737.5	719.6	706.7	701.9
47.5°	701.9	693.6	674.6	661.6	654.5
50°	655.6	649.7	633.1	616.5	610.5
52.5°	610.5	602.3	586.9	573.9	565.5
55°	564.4	557.2	543.0	528.8	522.9
57.5°	518.1	512.2	496.7	482.5	477.8
60°	471.8	467.1	450.6	437.5	434.0
62.5°	426.8	418.5	406.7	394.8	390.1
65°	380.6	373.4	361.6	350.9	345.1
67.5°	333.2	327.2	316.6	308.3	303.6
70°	289.3	284.6	273.9	265.5	260.9
72.5°	244.3	239.5	233.6	225.3	221.7
75°	199.2	196.9	190.8	183.8	186.2
77.5°	158.8	154.1	151.7	148.1	144.7
80°	118.6	117.3	114.9	111.5	109.1
82.5°	80.6	80.6	79.5	74.7	74.7
85°	48.6	47.5	46.3	42.6	41.5
87.5°	21.4	19.0	16.6	13.1	11.8
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



TEST NUMBER: P913608

CATALOG NUMBER: DFN2DIP-HX4F0-040D090US927-FLLFLL

**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



TEST NUMBER: P913608  
 CATALOG NUMBER: DFN2DIP-HX4F0-040D090US927-FLLFLL

**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	5.18	5.91	6.27	7.00	8.49	4.75	5.48	5.84	6.57	8.06
	3H	6.83	7.49	7.93	8.58	10.09	6.36	7.01	7.46	8.11	9.62
	4H	7.42	8.04	8.52	9.13	10.65	6.94	7.56	8.05	8.66	10.17
	6H	7.81	8.38	8.93	9.48	11.01	7.33	7.90	8.45	9.00	10.53
	8H	7.91	8.45	9.03	9.57	11.09	7.44	7.98	8.56	9.09	10.61
	12H	7.95	8.47	9.08	9.58	11.12	7.47	7.99	8.60	9.10	10.64
4H	2H	5.63	6.25	6.74	7.35	8.86	5.28	5.90	6.40	7.00	8.52
	3H	7.48	8.00	8.60	9.12	10.65	7.09	7.61	8.21	8.73	10.26
	4H	8.19	8.67	9.32	9.78	11.33	7.79	8.26	8.91	9.38	10.92
	6H	8.70	9.11	9.83	10.25	11.78	8.29	8.70	9.42	9.84	11.37
	8H	8.85	9.23	9.98	10.36	11.91	8.44	8.82	9.57	9.94	11.50
	12H	8.92	9.26	10.06	10.40	11.96	8.49	8.84	9.64	9.98	11.54
8H	4H	8.38	8.76	9.51	9.89	11.44	8.02	8.40	9.15	9.53	11.08
	6H	9.01	9.32	10.16	10.49	12.04	8.64	8.96	9.80	10.13	11.68
	8H	9.23	9.50	10.39	10.65	12.22	8.86	9.13	10.02	10.28	11.85
	12H	9.35	9.59	10.52	10.74	12.35	8.97	9.21	10.13	10.36	11.96
12H	4H	8.36	8.70	9.51	9.84	11.40	8.01	8.35	9.16	9.49	11.05
	6H	9.04	9.31	10.19	10.46	12.03	8.68	8.96	9.84	10.11	11.68
	8H	9.27	9.51	10.43	10.66	12.27	8.91	9.16	10.08	10.30	11.91