

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: P916204

Luminaire Tested: DFN2DIP-HX3F0-040D090US930-FLLFLL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P916204
REPORT IS A COMBINATION OF REPORTS P899287 AND P896089
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-HX3F0-040D090US930-FLLFLL
Description: 3 foot, Hexagon Define Geo, with Direct Frosted Lens, Indirect Frosted Lens
Light Source: -
Ballast/Driver: -

Summary

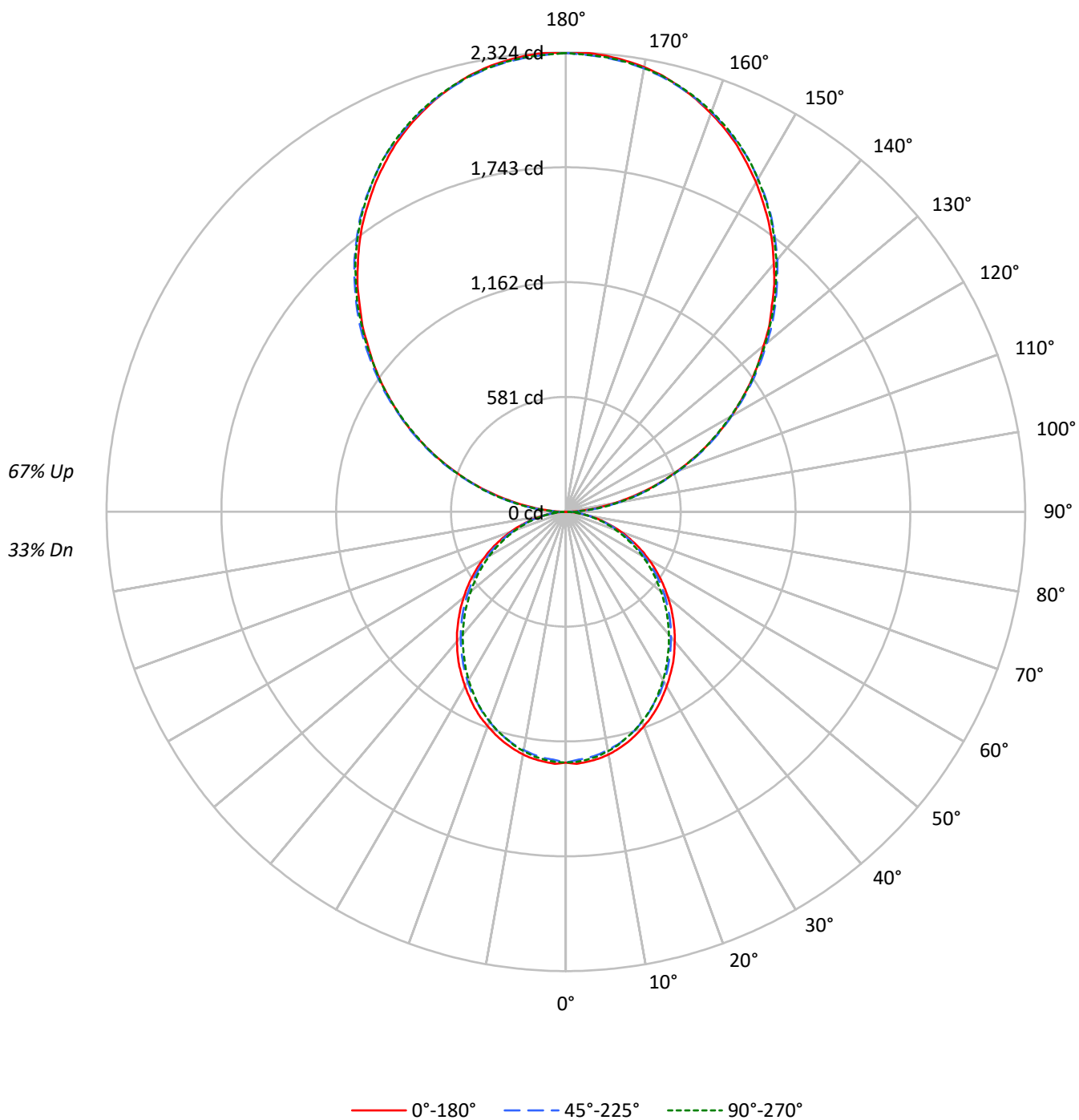
Lumens per Lamp: N/A
Luminaire Lumens: 9722.4 lumens
Efficiency: N/A
Efficacy: 92.1 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 2.84' x L: 3.28' x H: 0.1')
CIE Type: Semi-Indirect

Input Watts (W): 105.6
Input Voltage (V):
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.9968
Total Harmonic Distortion (THDi): 0.064
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 24 FT

TEST NUMBER: P916204

CATALOG NUMBER: DFN2DIP-HX3F0-040D090US930-FLLFLL

Luminous Intensity Polar Plot



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CATALOG NUMBER: DFN2DIP-HX3F0-040D090US930-FLLFLL

COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:

RF	20				20				20				20				20
RC	80				70				50				30				10
RW	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10
RCR																	
0	103	103	103	103	93	93	93	93	74	74	74	57	57	57	41	41	41
1	94	90	86	83	85	81	78	75	65	63	61	50	48	47	36	35	34
2	86	78	72	67	77	71	66	62	57	53	50	44	41	39	32	30	29
3	78	69	62	56	70	62	56	51	50	46	42	39	36	33	28	26	25
4	71	61	53	47	64	55	49	43	44	40	36	34	31	28	25	23	21
5	65	54	46	40	59	49	42	37	40	35	31	31	27	25	23	20	18
6	60	48	41	35	54	44	37	32	36	31	27	28	24	21	20	18	16
7	56	44	36	30	50	40	33	28	32	27	23	25	22	19	19	16	14
8	51	39	32	27	46	36	29	25	29	24	21	23	19	17	17	15	13
9	48	36	29	24	43	33	26	22	27	22	18	21	18	15	16	13	12
10	45	33	26	21	40	30	24	20	25	20	17	19	16	14	15	12	11

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	1470	1470	1470
5°	1472	1448	1458
10°	1459	1428	1438
15°	1437	1403	1406
20°	1407	1370	1374
25°	1378	1330	1336
30°	1341	1292	1289
35°	1306	1248	1239
40°	1263	1204	1192
45°	1220	1159	1143
50°	1173	1113	1087
55°	1124	1058	1035
60°	1068	994	975
65°	1008	928	905
70°	930	846	829
75°	824	749	758
80°	694	624	624
85°	493	413	405

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 90°

Vertical Angle: 90°

Luminance: 2182 cd/sqm

TEST NUMBER: P916204

CATALOG NUMBER: DFN2DIP-HX3F0-040D090US930-FLLFLL

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	119.4	1.2
10°-20°	336.0	3.5
20°-30°	493.8	5.1
30°-40°	573.6	5.9
40°-50°	572.9	5.9
50°-60°	499.5	5.1
60°-70°	369.3	3.8
70°-80°	208.9	2.1
80°-90°	61.7	0.6
90°-100°	143.6	1.5
100°-110°	456.3	4.7
110°-120°	780.8	8.0
120°-130°	1026.9	10.6
130°-140°	1152.6	11.9
140°-150°	1130.3	11.6
150°-160°	948.2	9.8
160°-170°	628.8	6.5
170°-180°	219.8	2.3
0°-30°	949.3	9.8
0°-40°	1522.9	15.7
0°-60°	2595.3	26.7
0°-90°	3235.2	33.3
90°-120°	1380.7	14.2
90°-150°	4690.5	48.2
90°-180°	6487.0	66.7
0°-180°	9722.4	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	1269	1269	1269	1269	1269	
5°	1269	1264	1251	1260	1258	120
15°	1208	1201	1185	1190	1184	340
25°	1093	1084	1063	1065	1063	503
35°	943	931	912	904	898	589
45°	768	759	741	727	722	592
55°	581	574	559	544	538	519
65°	392	384	372	361	355	387
75°	205	203	196	189	192	219
85°	50	49	48	44	43	56
90°	2	25	69	64	66	10
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: P916204

CATALOG NUMBER: DFN2DIP-HX3F0-040D090US930-FLLFLL

CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	1268.9	1268.9	1268.9	1268.9	1268.9
2.5°	1276.3	1270.2	1256.8	1268.9	1266.6
5°	1268.9	1264.1	1250.7	1260.4	1258.1
7.5°	1260.4	1253.1	1239.7	1249.5	1247.1
10°	1247.1	1238.5	1223.9	1233.6	1230.0
12.5°	1228.7	1221.4	1206.8	1212.9	1210.4
15°	1207.9	1200.7	1184.8	1189.7	1183.6
17.5°	1182.3	1175.1	1159.2	1165.2	1159.2
20°	1154.2	1147.0	1129.9	1133.5	1128.8
22.5°	1126.3	1115.2	1099.3	1099.3	1096.9
25°	1093.2	1083.5	1062.8	1065.2	1062.8
27.5°	1056.6	1048.1	1032.3	1028.7	1022.6
30°	1020.1	1010.3	992.1	988.4	983.5
32.5°	981.0	973.8	954.2	946.9	941.9
35°	943.2	931.1	911.5	904.2	898.1
37.5°	900.5	889.5	869.9	861.4	855.3
40°	856.6	846.8	827.2	816.4	811.5
42.5°	813.9	804.0	784.6	772.3	765.1
45°	767.5	759.0	740.6	727.3	722.4
47.5°	722.4	713.8	694.3	680.9	673.6
50°	674.7	668.6	651.6	634.5	628.4
52.5°	628.4	619.9	604.1	590.6	582.0
55°	580.9	573.5	558.9	544.2	538.2
57.5°	533.2	527.2	511.2	496.6	491.7
60°	485.6	480.8	463.7	450.3	446.6
62.5°	439.3	430.7	418.6	406.3	401.5
65°	391.8	384.3	372.2	361.2	355.1
67.5°	342.9	336.7	325.9	317.3	312.4
70°	297.7	292.9	281.8	273.3	268.5
72.5°	251.4	246.5	240.4	231.9	228.2
75°	205.0	202.6	196.4	189.1	191.6
77.5°	163.5	158.6	156.1	152.5	148.9
80°	122.1	120.7	118.3	114.7	112.3
82.5°	83.0	83.0	81.9	76.9	76.9
85°	50.0	48.8	47.6	43.9	42.7
87.5°	22.0	19.6	17.1	13.5	12.1
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: P916204

CATALOG NUMBER: DFN2DIP-HX3F0-040D090US930-FLLFLL

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	6.78	7.51	7.87	8.59	10.09	6.35	7.08	7.44	8.17	9.66
	3H	8.42	9.07	9.52	10.17	11.68	7.95	8.61	9.05	9.70	11.21
	4H	9.00	9.62	10.11	10.71	12.23	8.53	9.15	9.64	10.25	11.76
	6H	9.38	9.95	10.50	11.05	12.58	8.91	9.48	10.03	10.58	12.11
	8H	9.48	10.02	10.60	11.14	12.66	9.01	9.56	10.13	10.67	12.19
	12H	9.52	10.04	10.65	11.15	12.69	9.05	9.56	10.17	10.67	12.22
4H	2H	7.22	7.84	8.34	8.94	10.45	6.88	7.50	7.99	8.60	10.11
	3H	9.07	9.58	10.19	10.71	12.23	8.68	9.19	9.80	10.32	11.84
	4H	9.77	10.24	10.89	11.36	12.90	9.37	9.84	10.49	10.95	12.50
	6H	10.27	10.68	11.40	11.81	13.35	9.86	10.27	11.00	11.41	12.95
	8H	10.41	10.79	11.54	11.92	13.48	10.00	10.38	11.14	11.51	13.07
	12H	10.47	10.82	11.62	11.96	13.52	10.06	10.40	11.21	11.54	13.10
8H	4H	9.95	10.33	11.08	11.46	13.02	9.59	9.97	10.73	11.10	12.66
	6H	10.57	10.88	11.72	12.05	13.60	10.21	10.52	11.36	11.69	13.25
	8H	10.78	11.06	11.94	12.21	13.78	10.42	10.69	11.58	11.84	13.41
	12H	10.90	11.14	12.06	12.29	13.90	10.52	10.76	11.69	11.91	13.52
12H	4H	9.93	10.27	11.08	11.41	12.98	9.58	9.92	10.73	11.06	12.63
	6H	10.59	10.87	11.75	12.02	13.59	10.25	10.52	11.41	11.67	13.24
	8H	10.82	11.07	11.99	12.21	13.82	10.47	10.71	11.63	11.86	13.47