

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: P919182

Luminaire Tested: DFN2DIP-HX4F0-110D050US935-FLLFLL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P919182
REPORT IS A COMBINATION OF REPORTS P899331 AND P896188
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-HX4F0-110D050US935-FLLFLL
Description: 4 foot, Hexagon Define Geo, with Direct Frosted Lens, Indirect Frosted Lens
Light Source: -
Ballast/Driver: -

Summary

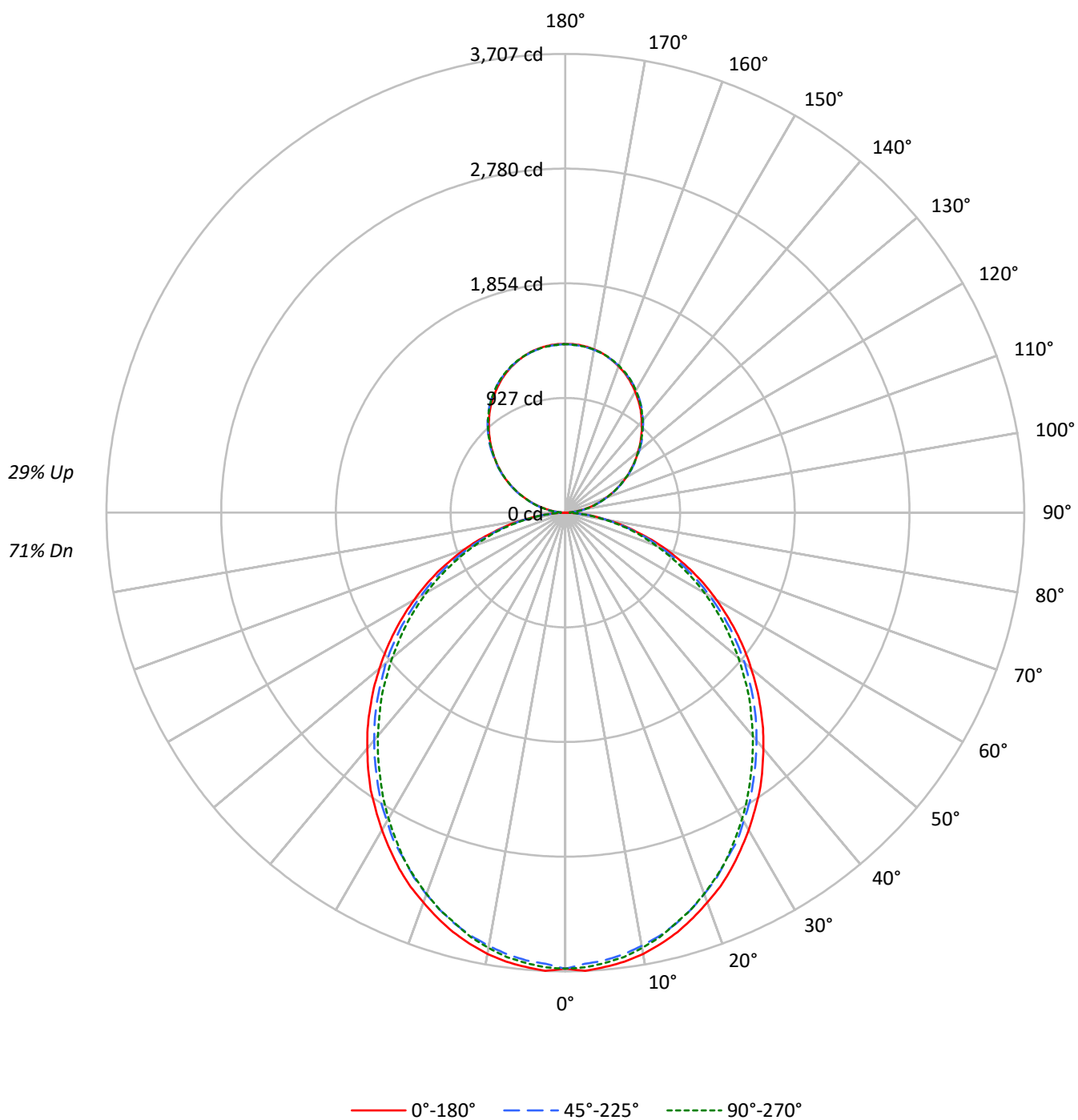
Lumens per Lamp: N/A
Luminaire Lumens: 13186.2 lumens
Efficiency: N/A
Efficacy: 93.6 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.54' x L: 4.09' x H: 0.1')
CIE Type: Semi-Direct

Input Watts (W): 140.9
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

TEST NUMBER: P919182

CATALOG NUMBER: DFN2DIP-HX4F0-110D050US935-FLLFLL

Luminous Intensity Polar Plot



TEST NUMBER: P919182

CATALOG NUMBER: DFN2DIP-HX4F0-110D050US935-FLLFL

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	112	112	112	112	106	106	106	106	95	95	95	85	85	85	76	76	76
1	103	98	94	90	97	93	89	86	84	81	78	75	73	71	67	65	64
2	93	86	79	74	88	81	76	71	73	69	65	66	62	59	59	56	54
3	85	75	68	62	80	72	65	59	65	59	55	58	54	50	52	49	46
4	78	67	59	52	74	64	56	50	58	51	47	52	47	43	47	43	40
5	72	60	51	45	68	57	49	43	52	45	40	47	41	37	42	38	34
6	66	54	45	39	63	51	44	38	47	40	35	42	37	33	38	34	30
7	61	49	40	35	58	46	39	33	42	36	31	39	33	29	35	30	27
8	57	44	36	31	54	42	35	30	39	32	28	35	30	26	32	28	24
9	53	41	33	28	50	39	32	27	36	29	25	33	27	24	30	25	22
10	50	37	30	25	47	36	29	24	33	27	23	30	25	21	28	23	20

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	2740	2740	2740
5°	2745	2702	2720
10°	2723	2666	2684
15°	2683	2623	2626
20°	2629	2562	2568
25°	2575	2489	2500
30°	2508	2422	2413
35°	2445	2342	2321
40°	2366	2261	2234
45°	2288	2181	2145
50°	2203	2096	2042
55°	2113	1998	1948
60°	2012	1881	1839
65°	1902	1761	1711
70°	1762	1614	1573
75°	1567	1438	1446
80°	1333	1215	1203
85°	968	828	800

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 2288 cd/sqm

TEST NUMBER: P919182

CATALOG NUMBER: DFN2DIP-HX4F0-110D050US935-FLLFLL

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	346.9	2.6
10°-20°	975.9	7.4
20°-30°	1434.2	10.9
30°-40°	1665.7	12.6
40°-50°	1663.7	12.6
50°-60°	1450.7	11.0
60°-70°	1072.4	8.1
70°-80°	606.7	4.6
80°-90°	164.0	1.2
90°-100°	84.2	0.6
100°-110°	267.7	2.0
110°-120°	458.1	3.5
120°-130°	602.5	4.6
130°-140°	676.3	5.1
140°-150°	663.1	5.0
150°-160°	556.3	4.2
160°-170°	368.9	2.8
170°-180°	128.9	1.0
0°-30°	2757.0	20.9
0°-40°	4422.7	33.5
0°-60°	7537.0	57.2
0°-90°	9380.1	71.1
90°-120°	810.0	6.1
90°-150°	2751.9	20.9
90°-180°	3806.0	28.9
0°-180°	13186.2	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	3685	3685	3685	3685	3685	
5°	3685	3671	3632	3660	3654	350
15°	3508	3487	3441	3455	3437	988
25°	3175	3147	3087	3094	3087	1461
35°	2739	2704	2647	2626	2608	1711
45°	2229	2204	2151	2112	2098	1720
55°	1687	1666	1623	1580	1563	1508
65°	1138	1116	1081	1049	1031	1125
75°	595	588	570	549	556	635
85°	145	142	138	127	124	162
90°	1	15	40	38	39	13
95°	60	72	73	73	72	67
105°	247	250	253	255	255	261
115°	460	466	464	463	460	455
125°	669	679	676	672	671	598
135°	865	878	880	879	876	669
145°	1050	1058	1065	1066	1061	656
155°	1201	1204	1208	1213	1210	553
165°	1306	1305	1305	1313	1307	368
175°	1359	1356	1353	1362	1354	129
180°	1362	1362	1362	1362	1362	

TEST NUMBER: P919182

CATALOG NUMBER: DFN2DIP-HX4F0-110D050US935-FLLFLL

CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	3685.2	3685.2	3685.2	3685.2	3685.2
2.5°	3706.6	3688.9	3649.9	3685.2	3678.4
5°	3685.2	3671.3	3632.2	3660.4	3653.6
7.5°	3660.4	3639.4	3600.3	3628.8	3621.7
10°	3621.7	3596.8	3554.4	3582.5	3572.0
12.5°	3568.3	3547.2	3504.8	3522.4	3515.3
15°	3508.1	3487.0	3440.8	3455.1	3437.4
17.5°	3433.7	3412.7	3366.4	3384.1	3366.4
20°	3352.1	3331.0	3281.4	3291.9	3278.1
22.5°	3270.9	3238.9	3192.7	3192.7	3185.5
25°	3175.0	3146.9	3086.7	3093.5	3086.7
27.5°	3068.6	3043.8	2997.9	2987.4	2969.8
30°	2962.6	2934.0	2881.0	2870.5	2856.2
32.5°	2849.0	2828.0	2771.2	2749.8	2735.5
35°	2739.3	2704.0	2647.1	2625.7	2608.0
37.5°	2615.2	2583.3	2526.5	2501.6	2484.0
40°	2487.8	2459.2	2402.4	2370.8	2356.6
42.5°	2363.7	2335.1	2278.7	2243.0	2222.0
45°	2229.1	2204.2	2150.9	2112.2	2097.9
47.5°	2097.9	2073.1	2016.3	1977.2	1956.1
50°	1959.5	1941.9	1892.2	1842.6	1825.0
52.5°	1825.0	1800.1	1754.3	1715.1	1690.3
55°	1687.0	1665.5	1623.1	1580.5	1562.9
57.5°	1548.6	1530.9	1484.7	1442.2	1427.9
60°	1410.2	1396.4	1346.7	1307.6	1297.1
62.5°	1275.7	1250.9	1215.5	1180.2	1165.9
65°	1137.6	1116.2	1080.9	1049.0	1031.3
67.5°	995.9	977.9	946.3	921.5	907.2
70°	864.7	850.4	818.5	793.7	779.7
72.5°	730.1	715.8	698.2	673.4	662.8
75°	595.1	588.4	570.3	549.3	556.5
77.5°	474.8	460.5	453.4	442.9	432.4
80°	354.6	350.8	343.6	333.1	326.0
82.5°	241.0	241.0	237.6	223.3	223.3
85°	145.2	141.7	138.4	127.4	124.1
87.5°	63.9	56.7	49.6	39.1	35.3
90°	1.2	14.8	40.2	37.8	39.0
92.5°	25.5	34.4	35.7	36.9	36.9
95°	59.9	71.5	73.4	73.4	71.5
97.5°	99.7	110.4	114.9	114.9	114.9
100°	145.7	155.2	158.4	158.4	157.2
102.5°	194.2	201.1	205.6	206.9	205.6
105°	247.1	250.4	252.9	254.9	254.9
107.5°	299.6	304.5	304.5	305.4	299.6
110°	350.5	357.1	357.1	357.1	353.8

TEST NUMBER: P919182

CATALOG NUMBER: DFN2DIP-HX4F0-110D050US935-FLLFLL

CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	405.5	412.5	411.3	408.0	405.5
115°	459.7	466.3	464.3	463.0	459.7
117.5°	513.5	522.5	516.8	513.5	510.2
120°	567.7	576.7	567.7	567.7	564.0
122.5°	616.9	628.4	622.7	619.4	616.9
125°	668.7	678.9	675.6	671.9	670.7
127.5°	719.1	731.8	727.4	722.4	719.1
130°	766.4	781.1	779.0	776.6	772.1
132.5°	819.3	830.8	831.6	825.9	822.6
135°	864.9	877.5	880.0	878.8	875.5
137.5°	915.8	926.0	928.1	927.2	922.3
140°	960.4	970.8	976.5	976.5	972.0
142.5°	1006.4	1016.8	1020.0	1021.2	1016.8
145°	1050.0	1058.2	1064.7	1066.0	1061.4
147.5°	1089.0	1099.2	1104.1	1106.2	1101.6
150°	1129.2	1136.2	1140.6	1144.4	1140.6
152.5°	1164.9	1171.9	1177.6	1182.2	1177.6
155°	1200.6	1203.8	1207.5	1213.3	1209.6
157.5°	1231.4	1233.8	1235.9	1244.1	1238.4
160°	1258.9	1261.4	1262.6	1269.5	1264.6
162.5°	1284.4	1284.4	1285.6	1293.4	1287.6
165°	1306.1	1304.8	1304.8	1313.1	1307.3
167.5°	1325.8	1322.1	1322.1	1330.3	1324.6
170°	1340.6	1337.3	1336.1	1344.3	1337.3
172.5°	1350.8	1347.5	1346.3	1354.5	1347.5
175°	1359.1	1355.7	1353.3	1361.5	1354.5
177.5°	1363.6	1360.3	1357.8	1364.8	1357.8
180°	1361.5	1361.5	1361.5	1361.5	1361.5

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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	12.53	13.62	13.28	14.39	15.33	12.10	13.19	12.85	13.96	14.90
	3H	14.21	15.19	14.97	15.97	16.94	13.74	14.71	14.50	15.50	16.46
	4H	14.81	15.73	15.59	16.52	17.50	14.33	15.26	15.12	16.05	17.03
	6H	15.22	16.07	16.01	16.87	17.86	14.74	15.60	15.54	16.40	17.39
	8H	15.33	16.14	16.14	16.96	17.95	14.86	15.67	15.66	16.49	17.48
	12H	15.39	16.16	16.20	16.98	17.99	14.91	15.68	15.72	16.49	17.51
4H	2H	13.02	13.94	13.81	14.74	15.71	12.67	13.60	13.46	14.39	15.37
	3H	14.91	15.68	15.71	16.51	17.50	14.51	15.29	15.31	16.11	17.11
	4H	15.63	16.33	16.44	17.16	18.18	15.23	15.93	16.04	16.75	17.77
	6H	16.16	16.77	16.99	17.62	18.64	15.75	16.36	16.58	17.21	18.23
	8H	16.32	16.88	17.15	17.73	18.77	15.90	16.47	16.74	17.32	18.36
	12H	16.40	16.91	17.25	17.78	18.82	15.98	16.49	16.83	17.36	18.40
8H	4H	15.85	16.42	16.68	17.26	18.30	15.49	16.06	16.32	16.90	17.94
	6H	16.49	16.96	17.35	17.85	18.89	16.13	16.60	16.99	17.49	18.52
	8H	16.71	17.13	17.59	18.01	19.07	16.34	16.76	17.22	17.65	18.70
	12H	16.86	17.22	17.73	18.10	19.21	16.47	16.84	17.35	17.71	18.82
12H	4H	15.84	16.36	16.70	17.22	18.27	15.49	16.00	16.35	16.87	17.91
	6H	16.52	16.94	17.39	17.82	18.88	16.17	16.59	17.04	17.47	18.53
	8H	16.78	17.14	17.65	18.02	19.13	16.42	16.79	17.29	17.66	18.77