

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: P916448

Luminaire Tested: DFN2DIP-HX4F0-100D110US930-FLLFLL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P916448
REPORT IS A COMBINATION OF REPORTS P899437 AND P896188
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-HX4F0-100D110US930-FLLFLL
Description: 4 foot, Hexagon Define Geo, with Direct Frosted Lens, Indirect Frosted Lens
Light Source: -
Ballast/Driver: -

Summary

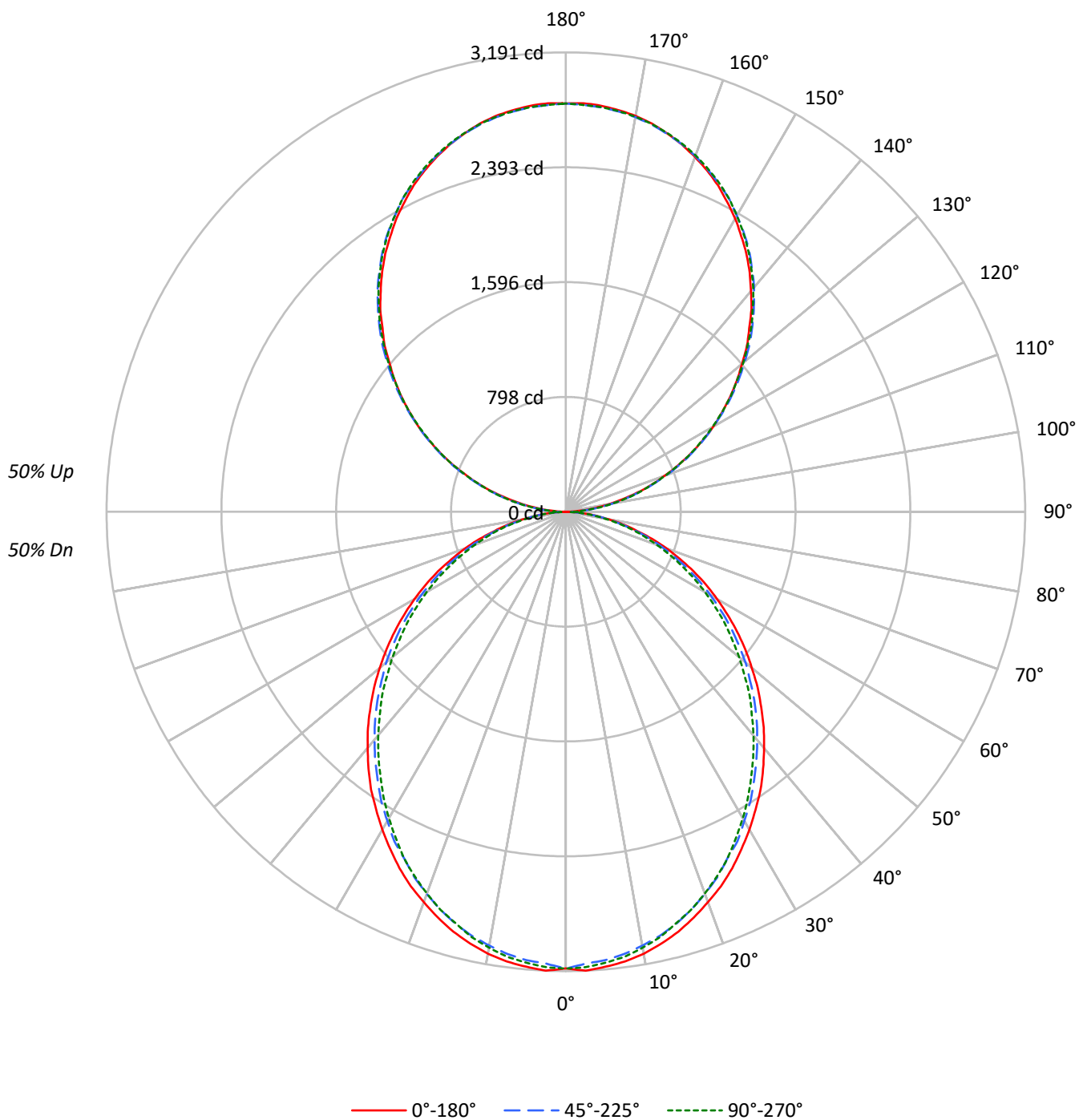
Lumens per Lamp: N/A
Luminaire Lumens: 16008.4 lumens
Efficiency: N/A
Efficacy: 97.3 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.54' x L: 4.09' x H: 0.1')
CIE Type: General Diffuse

Input Watts (W): 164.6
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

TEST NUMBER: P916448

CATALOG NUMBER: DFN2DIP-HX4F0-100D110US930-FLLFLL

Luminous Intensity Polar Plot



TEST NUMBER: P916448

CATALOG NUMBER: DFN2DIP-HX4F0-100D110US930-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	107	107	107	107	99	99	99	99	84	84	84	69	69	69	57	57	57
1	98	94	90	86	90	86	83	80	73	71	69	61	59	58	50	49	48
2	89	82	76	70	82	76	70	66	64	60	57	54	51	48	44	42	40
3	81	72	64	59	75	67	60	55	57	52	48	47	44	41	39	36	34
4	74	64	56	50	68	59	52	47	50	45	41	42	38	35	35	32	30
5	68	57	49	42	63	53	45	40	45	39	35	38	34	30	31	28	26
6	63	51	43	37	58	47	40	35	41	35	31	34	30	27	29	25	23
7	58	46	38	32	54	43	36	31	37	31	27	31	27	24	26	23	20
8	54	42	34	29	50	39	32	27	34	28	24	29	24	21	24	21	18
9	50	38	31	25	46	36	29	24	31	25	22	26	22	19	22	19	16
10	47	35	28	23	43	33	26	22	28	23	19	24	20	17	20	17	15

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	2359	2359	2359
5°	2363	2326	2342
10°	2344	2295	2310
15°	2310	2258	2261
20°	2263	2205	2210
25°	2217	2143	2152
30°	2159	2085	2077
35°	2104	2016	1998
40°	2037	1947	1923
45°	1970	1877	1847
50°	1896	1804	1758
55°	1819	1720	1677
60°	1732	1619	1583
65°	1637	1516	1473
70°	1516	1390	1354
75°	1349	1238	1245
80°	1148	1046	1036
85°	833	713	689

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 90°

Vertical Angle: 90°

Luminance: 2138 cd/sqm

TEST NUMBER: P916448

CATALOG NUMBER: DFN2DIP-HX4F0-100D110US930-FLLFLL

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	298.6	1.9
10°-20°	840.1	5.2
20°-30°	1234.6	7.7
30°-40°	1433.9	9.0
40°-50°	1432.1	8.9
50°-60°	1248.8	7.8
60°-70°	923.1	5.8
70°-80°	522.3	3.3
80°-90°	145.9	0.9
90°-100°	175.5	1.1
100°-110°	557.7	3.5
110°-120°	954.3	6.0
120°-130°	1255.1	7.8
130°-140°	1408.8	8.8
140°-150°	1381.5	8.6
150°-160°	1158.9	7.2
160°-170°	768.5	4.8
170°-180°	268.6	1.7
0°-30°	2373.3	14.8
0°-40°	3807.2	23.8
0°-60°	6488.2	40.5
0°-90°	8079.5	50.5
90°-120°	1687.5	10.5
90°-150°	5732.8	35.8
90°-180°	7929.0	49.5
0°-180°	16008.4	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	3172	3172	3172	3172	3172	
5°	3172	3160	3127	3151	3145	301
15°	3020	3002	2962	2974	2959	851
25°	2733	2709	2657	2663	2657	1258
35°	2358	2328	2279	2260	2245	1473
45°	1919	1898	1852	1818	1806	1481
55°	1452	1434	1397	1361	1345	1298
65°	979	961	930	903	888	968
75°	512	506	491	473	479	547
85°	125	122	119	110	107	139
90°	2	31	84	79	81	15
95°	125	149	153	153	149	139
105°	515	522	527	531	531	543
115°	958	971	967	965	958	947
125°	1393	1414	1407	1400	1397	1245
135°	1802	1828	1833	1831	1824	1393
145°	2187	2204	2218	2221	2211	1367
155°	2501	2508	2516	2528	2520	1151
165°	2721	2718	2718	2735	2723	768
175°	2831	2824	2819	2836	2822	269
180°	2836	2836	2836	2836	2836	

TEST NUMBER: P916448

CATALOG NUMBER: DFN2DIP-HX4F0-100D110US930-FLLFLL

CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	3172.4	3172.4	3172.4	3172.4	3172.4
2.5°	3190.8	3175.6	3141.9	3172.4	3166.5
5°	3172.4	3160.4	3126.8	3151.0	3145.2
7.5°	3151.0	3132.9	3099.2	3123.8	3117.7
10°	3117.7	3096.3	3059.7	3084.0	3075.0
12.5°	3071.7	3053.6	3017.0	3032.3	3026.1
15°	3019.9	3001.8	2962.0	2974.3	2959.1
17.5°	2955.9	2937.8	2897.9	2913.1	2897.9
20°	2885.6	2867.5	2824.8	2833.8	2821.8
22.5°	2815.7	2788.2	2748.4	2748.4	2742.3
25°	2733.2	2708.9	2657.1	2662.9	2657.1
27.5°	2641.6	2620.2	2580.7	2571.7	2556.4
30°	2550.3	2525.7	2480.1	2471.0	2458.7
32.5°	2452.6	2434.5	2385.6	2367.1	2354.8
35°	2358.1	2327.7	2278.8	2260.3	2245.1
37.5°	2251.3	2223.7	2174.9	2153.5	2138.3
40°	2141.5	2116.9	2068.1	2040.9	2028.6
42.5°	2034.7	2010.1	1961.6	1930.9	1912.8
45°	1918.9	1897.5	1851.5	1818.2	1806.0
47.5°	1806.0	1784.6	1735.7	1702.0	1683.9
50°	1686.9	1671.6	1628.9	1586.2	1571.0
52.5°	1571.0	1549.6	1510.1	1476.5	1455.1
55°	1452.2	1433.8	1397.2	1360.6	1345.4
57.5°	1333.1	1317.8	1278.1	1241.5	1229.2
60°	1214.0	1202.0	1159.3	1125.6	1116.6
62.5°	1098.1	1076.8	1046.4	1015.9	1003.6
65°	979.3	960.9	930.5	902.9	887.8
67.5°	857.4	841.8	814.6	793.3	781.0
70°	744.4	732.1	704.6	683.2	671.2
72.5°	628.5	616.2	601.0	579.7	570.5
75°	512.3	506.5	491.0	472.9	479.0
77.5°	408.8	396.5	390.3	381.2	372.2
80°	305.2	302.0	295.8	286.7	280.6
82.5°	207.5	207.5	204.6	192.2	192.2
85°	124.9	122.1	119.1	109.7	106.8
87.5°	55.0	48.8	42.7	33.7	30.4
90°	2.5	30.8	83.8	78.7	81.2
92.5°	53.0	71.8	74.4	77.0	77.0
95°	124.8	148.8	153.0	153.0	148.8
97.5°	207.8	230.0	239.5	239.5	239.5
100°	303.5	323.2	330.0	330.0	327.5
102.5°	404.5	419.0	428.4	431.0	428.4
105°	514.8	521.6	526.8	531.0	531.0
107.5°	624.2	634.5	634.5	636.2	624.2
110°	730.3	744.0	744.0	744.0	737.1

TEST NUMBER: P916448

CATALOG NUMBER: DFN2DIP-HX4F0-100D110US930-FLLFLL

CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	844.8	859.3	856.8	849.9	844.8
115°	957.7	971.3	967.1	964.6	957.7
117.5°	1069.8	1088.5	1076.5	1069.8	1062.9
120°	1182.6	1201.4	1182.6	1182.6	1174.9
122.5°	1285.2	1309.1	1297.1	1290.3	1285.2
125°	1392.9	1414.3	1407.4	1399.8	1397.2
127.5°	1498.1	1524.6	1515.2	1505.0	1498.1
130°	1596.4	1627.3	1622.9	1617.8	1608.4
132.5°	1706.7	1730.7	1732.4	1720.4	1713.6
135°	1801.6	1828.1	1833.3	1830.8	1823.9
137.5°	1907.7	1929.1	1933.3	1931.6	1921.4
140°	2000.9	2022.3	2034.3	2034.3	2024.9
142.5°	2096.7	2118.1	2124.9	2127.4	2118.1
145°	2187.3	2204.4	2218.1	2220.6	2211.3
147.5°	2268.6	2289.9	2300.2	2304.4	2295.1
150°	2352.4	2366.9	2376.3	2384.0	2376.3
152.5°	2426.7	2441.2	2453.2	2462.7	2453.2
155°	2501.2	2507.9	2515.7	2527.7	2519.9
157.5°	2565.3	2570.4	2574.6	2591.8	2579.8
160°	2622.6	2627.7	2630.2	2644.8	2634.6
162.5°	2675.6	2675.6	2678.2	2694.4	2682.4
165°	2720.9	2718.3	2718.3	2735.4	2723.4
167.5°	2761.9	2754.2	2754.2	2771.4	2759.4
170°	2792.7	2785.9	2783.3	2800.4	2785.9
172.5°	2814.1	2807.2	2804.7	2821.8	2807.2
175°	2831.2	2824.4	2819.2	2836.3	2821.8
177.5°	2840.6	2833.7	2828.6	2843.2	2828.6
180°	2836.3	2836.3	2836.3	2836.3	2836.3

TEST NUMBER: P916448

CATALOG NUMBER: DFN2DIP-HX4F0-100D110US930-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	10.30	11.16	11.25	12.13	13.40	9.86	10.73	10.82	11.70	12.96
	3H	11.96	12.73	12.92	13.71	15.00	11.49	12.26	12.45	13.24	14.53
	4H	12.55	13.28	13.52	14.26	15.56	12.07	12.81	13.05	13.79	15.09
	6H	12.95	13.62	13.94	14.61	15.92	12.47	13.15	13.46	14.14	15.44
	8H	13.05	13.70	14.05	14.70	16.01	12.58	13.22	13.57	14.23	15.53
	12H	13.10	13.71	14.10	14.71	16.04	12.62	13.23	13.62	14.23	15.56
4H	2H	10.76	11.49	11.74	12.48	13.77	10.41	11.15	11.40	12.13	13.43
	3H	12.63	13.24	13.62	14.25	15.56	12.23	12.85	13.23	13.86	15.17
	4H	13.34	13.90	14.34	14.91	16.24	12.94	13.50	13.94	14.50	15.83
	6H	13.86	14.34	14.87	15.37	16.70	13.45	13.93	14.46	14.96	16.29
	8H	14.01	14.46	15.02	15.48	16.83	13.60	14.05	14.61	15.07	16.41
	12H	14.08	14.49	15.12	15.53	16.88	13.66	14.07	14.69	15.10	16.45
8H	4H	13.54	13.99	14.55	15.01	16.36	13.18	13.63	14.19	14.65	16.00
	6H	14.17	14.55	15.21	15.61	16.95	13.81	14.18	14.85	15.25	16.59
	8H	14.39	14.72	15.44	15.77	17.13	14.02	14.35	15.07	15.40	16.76
	12H	14.53	14.82	15.58	15.86	17.26	14.14	14.43	15.19	15.47	16.88
12H	4H	13.53	13.93	14.56	14.97	16.32	13.17	13.58	14.21	14.62	15.97
	6H	14.20	14.53	15.25	15.58	16.94	13.85	14.18	14.90	15.23	16.59
	8H	14.45	14.74	15.50	15.78	17.18	14.09	14.38	15.14	15.42	16.83