

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: P913734

Luminaire Tested: DFN2DIP-HX4F0-110D090US927-FLLFLL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P913734
REPORT IS A COMBINATION OF REPORTS P899403 AND P896188
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-HX4F0-110D090US927-FLLFLL
Description: 4 foot, Hexagon Define Geo, with Direct Frosted Lens, Indirect Frosted Lens
Light Source: -
Ballast/Driver: -

Summary

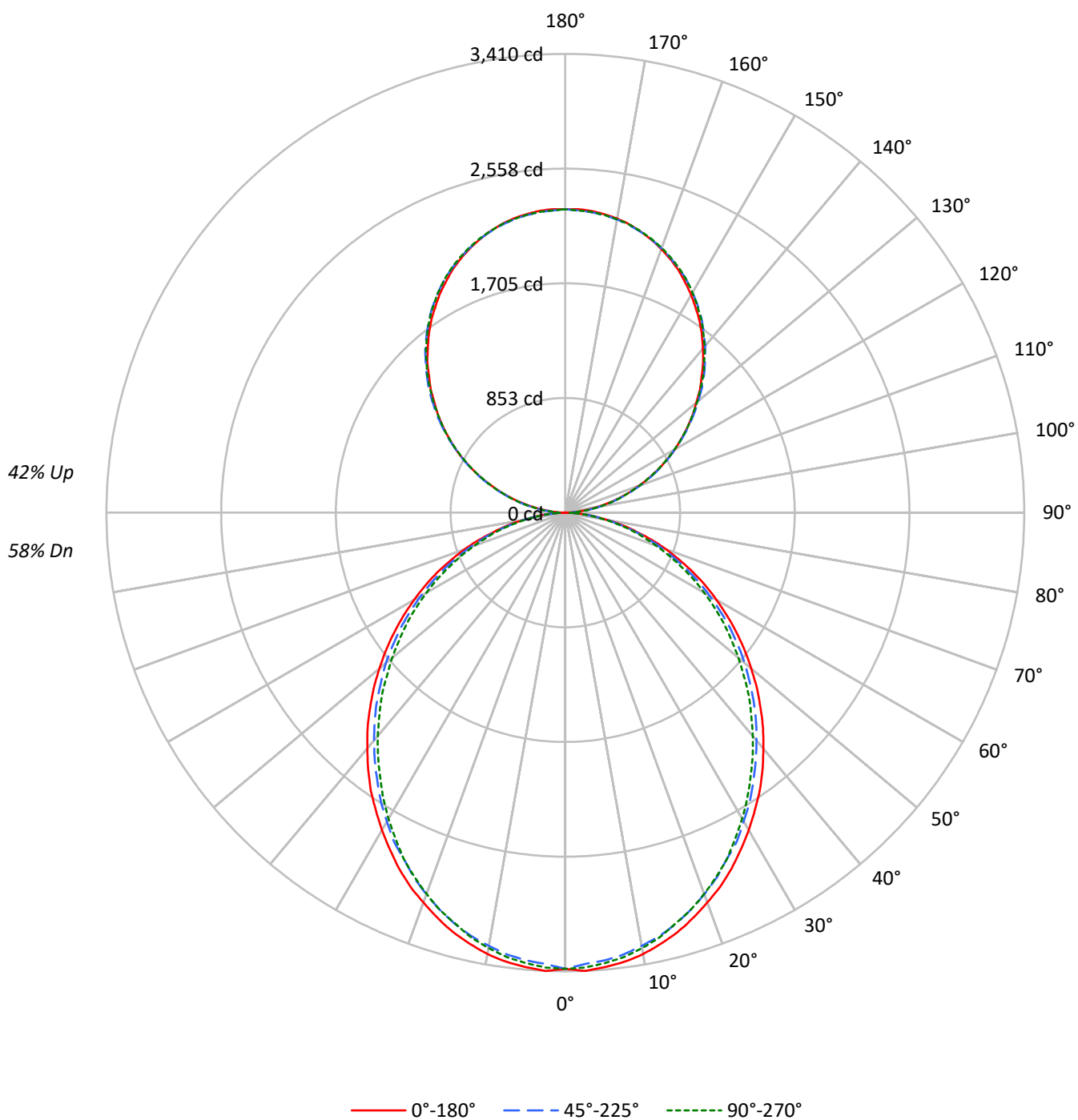
Lumens per Lamp: N/A
Luminaire Lumens: 14936.6 lumens
Efficiency: N/A
Efficacy: 91.5 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.54' x L: 4.09' x H: 0.1')
CIE Type: General Diffuse

Input Watts (W): 163.3
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: P913734

CATALOG NUMBER: DFN2DIP-HX4F0-110D090US927-FLLFLL

Luminous Intensity Polar Plot



TEST NUMBER: P913734

CATALOG NUMBER: DFN2DIP-HX4F0-110D090US927-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	109	109	109	109	102	102	102	102	88	88	88	75	75	75	63	63	63
1	100	95	91	88	93	89	85	82	77	74	72	66	64	62	56	55	53
2	91	83	77	72	84	78	72	68	67	63	60	58	55	52	49	47	45
3	83	73	66	60	77	68	62	56	59	54	50	51	47	44	44	41	38
4	76	65	57	51	70	61	53	48	53	47	43	46	41	38	39	36	33
5	70	58	49	43	65	54	47	41	47	42	37	41	36	33	35	32	29
6	64	52	44	38	60	49	41	36	43	37	32	37	32	29	32	28	25
7	59	47	39	33	55	44	37	32	39	33	29	34	29	26	29	25	23
8	55	43	35	29	51	40	33	28	35	30	25	31	26	23	27	23	20
9	51	39	31	26	48	37	30	25	32	27	23	29	24	21	25	21	18
10	48	36	28	24	45	34	27	23	30	24	21	26	22	19	23	19	17

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	2521	2521	2521
5°	2525	2486	2503
10°	2505	2453	2469
15°	2468	2413	2416
20°	2419	2357	2362
25°	2370	2290	2300
30°	2308	2228	2220
35°	2249	2155	2136
40°	2177	2080	2056
45°	2105	2006	1974
50°	2026	1928	1879
55°	1944	1838	1792
60°	1851	1731	1692
65°	1750	1620	1574
70°	1621	1485	1447
75°	1442	1323	1331
80°	1227	1118	1107
85°	891	762	737

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°
Vertical Angle: 45°
Luminance: 2105 cd/sqm

TEST NUMBER: P913734

CATALOG NUMBER: DFN2DIP-HX4F0-110D090US927-FLLFLL

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	319.1	2.1
10°-20°	897.9	6.0
20°-30°	1319.6	8.8
30°-40°	1532.6	10.3
40°-50°	1530.7	10.2
50°-60°	1334.7	8.9
60°-70°	986.7	6.6
70°-80°	558.2	3.7
80°-90°	153.7	1.0
90°-100°	139.5	0.9
100°-110°	443.3	3.0
110°-120°	758.7	5.1
120°-130°	997.8	6.7
130°-140°	1120.0	7.5
140°-150°	1098.2	7.4
150°-160°	921.3	6.2
160°-170°	611.0	4.1
170°-180°	213.5	1.4
0°-30°	2536.6	17.0
0°-40°	4069.2	27.2
0°-60°	6934.6	46.4
0°-90°	8633.2	57.8
90°-120°	1341.5	9.0
90°-150°	4557.5	30.5
90°-180°	6303.0	42.2
0°-180°	14936.6	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	3391	3391	3391	3391	3391	
5°	3391	3378	3342	3368	3362	322
15°	3228	3208	3166	3179	3163	909
25°	2921	2895	2840	2846	2840	1344
35°	2520	2488	2436	2416	2400	1574
45°	2051	2028	1979	1943	1930	1583
55°	1552	1532	1493	1454	1438	1388
65°	1047	1027	994	965	949	1035
75°	548	541	525	505	512	585
85°	134	130	127	117	114	149
90°	2	24	67	62	65	14
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: P913734

CATALOG NUMBER: DFN2DIP-HX4F0-110D090US927-FLLFLL

CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	3390.7	3390.7	3390.7	3390.7	3390.7
2.5°	3410.3	3394.1	3358.1	3390.7	3384.4
5°	3390.7	3377.9	3341.9	3367.8	3361.6
7.5°	3367.8	3348.5	3312.5	3338.8	3332.2
10°	3332.2	3309.3	3270.3	3296.2	3286.5
12.5°	3283.1	3263.7	3224.7	3240.9	3234.3
15°	3227.7	3208.3	3165.8	3178.9	3162.7
17.5°	3159.2	3139.9	3097.3	3113.6	3097.3
20°	3084.2	3064.8	3019.2	3028.8	3016.1
22.5°	3009.5	2980.0	2937.5	2937.5	2930.9
25°	2921.2	2895.3	2840.0	2846.2	2840.0
27.5°	2823.3	2800.5	2758.3	2748.6	2732.4
30°	2725.8	2699.5	2650.7	2641.1	2627.9
32.5°	2621.3	2602.0	2549.7	2530.0	2516.8
35°	2520.3	2487.8	2435.6	2415.8	2399.6
37.5°	2406.2	2376.8	2324.6	2301.7	2285.4
40°	2288.9	2262.6	2210.4	2181.4	2168.2
42.5°	2174.8	2148.5	2096.6	2063.7	2044.4
45°	2051.0	2028.1	1978.9	1943.4	1930.2
47.5°	1930.2	1907.4	1855.1	1819.2	1799.8
50°	1802.9	1786.7	1741.0	1695.3	1679.1
52.5°	1679.1	1656.2	1614.1	1578.0	1555.2
55°	1552.1	1532.4	1493.3	1454.2	1438.0
57.5°	1424.8	1408.6	1366.0	1326.9	1313.8
60°	1297.5	1284.8	1239.1	1203.1	1193.4
62.5°	1173.7	1150.9	1118.3	1085.8	1072.7
65°	1046.7	1027.0	994.5	965.1	948.9
67.5°	916.3	899.8	870.7	847.9	834.7
70°	795.6	782.4	753.0	730.2	717.4
72.5°	671.8	658.6	642.4	619.6	609.8
75°	547.6	541.4	524.7	505.4	512.0
77.5°	436.9	423.7	417.2	407.5	397.8
80°	326.2	322.7	316.2	306.5	299.9
82.5°	221.7	221.7	218.6	205.5	205.5
85°	133.6	130.4	127.3	117.2	114.2
87.5°	58.8	52.2	45.6	36.0	32.5
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: P913734

CATALOG NUMBER: DFN2DIP-HX4F0-110D090US927-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

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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	11.18	12.11	12.06	13.02	14.17	10.74	11.68	11.63	12.59	13.74
	3H	12.84	13.68	13.74	14.60	15.78	12.37	13.21	13.27	14.13	15.31
	4H	13.43	14.23	14.35	15.15	16.34	12.96	13.75	13.87	14.68	15.87
	6H	13.84	14.57	14.76	15.50	16.70	13.36	14.09	14.29	15.02	16.23
	8H	13.95	14.64	14.88	15.59	16.79	13.47	14.17	14.40	15.11	16.32
	12H	14.00	14.66	14.94	15.60	16.83	13.52	14.18	14.45	15.12	16.35
4H	2H	11.65	12.44	12.57	13.36	14.55	11.30	12.10	12.22	13.02	14.21
	3H	13.52	14.18	14.45	15.14	16.34	13.13	13.79	14.06	14.74	15.95
	4H	14.24	14.84	15.18	15.79	17.02	13.83	14.44	14.77	15.39	16.62
	6H	14.76	15.28	15.71	16.25	17.48	14.35	14.87	15.30	15.84	17.07
	8H	14.91	15.40	15.87	16.36	17.61	14.50	14.99	15.45	15.95	17.20
	12H	14.99	15.43	15.96	16.41	17.66	14.57	15.01	15.54	15.99	17.24
8H	4H	14.44	14.93	15.40	15.90	17.14	14.08	14.57	15.04	15.53	16.78
	6H	15.08	15.48	16.06	16.49	17.73	14.71	15.12	15.70	16.13	17.37
	8H	15.30	15.66	16.29	16.65	17.91	14.93	15.29	15.92	16.28	17.54
	12H	15.44	15.75	16.43	16.74	18.05	15.05	15.36	16.05	16.35	17.66
12H	4H	14.43	14.87	15.41	15.85	17.10	14.08	14.52	15.05	15.50	16.75
	6H	15.11	15.47	16.10	16.46	17.72	14.76	15.11	15.75	16.11	17.37
	8H	15.35	15.67	16.35	16.66	17.97	15.00	15.31	15.99	16.30	17.61