

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: P919180

Luminaire Tested: DFN2DIP-HX4F0-110D040US935-FLLFLL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P919180
REPORT IS A COMBINATION OF REPORTS P899313 AND P896188
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-HX4F0-110D040US935-FLLFLL
Description: 4 foot, Hexagon Define Geo, with Direct Frosted Lens, Indirect Frosted Lens
Light Source: -
Ballast/Driver: -

Summary

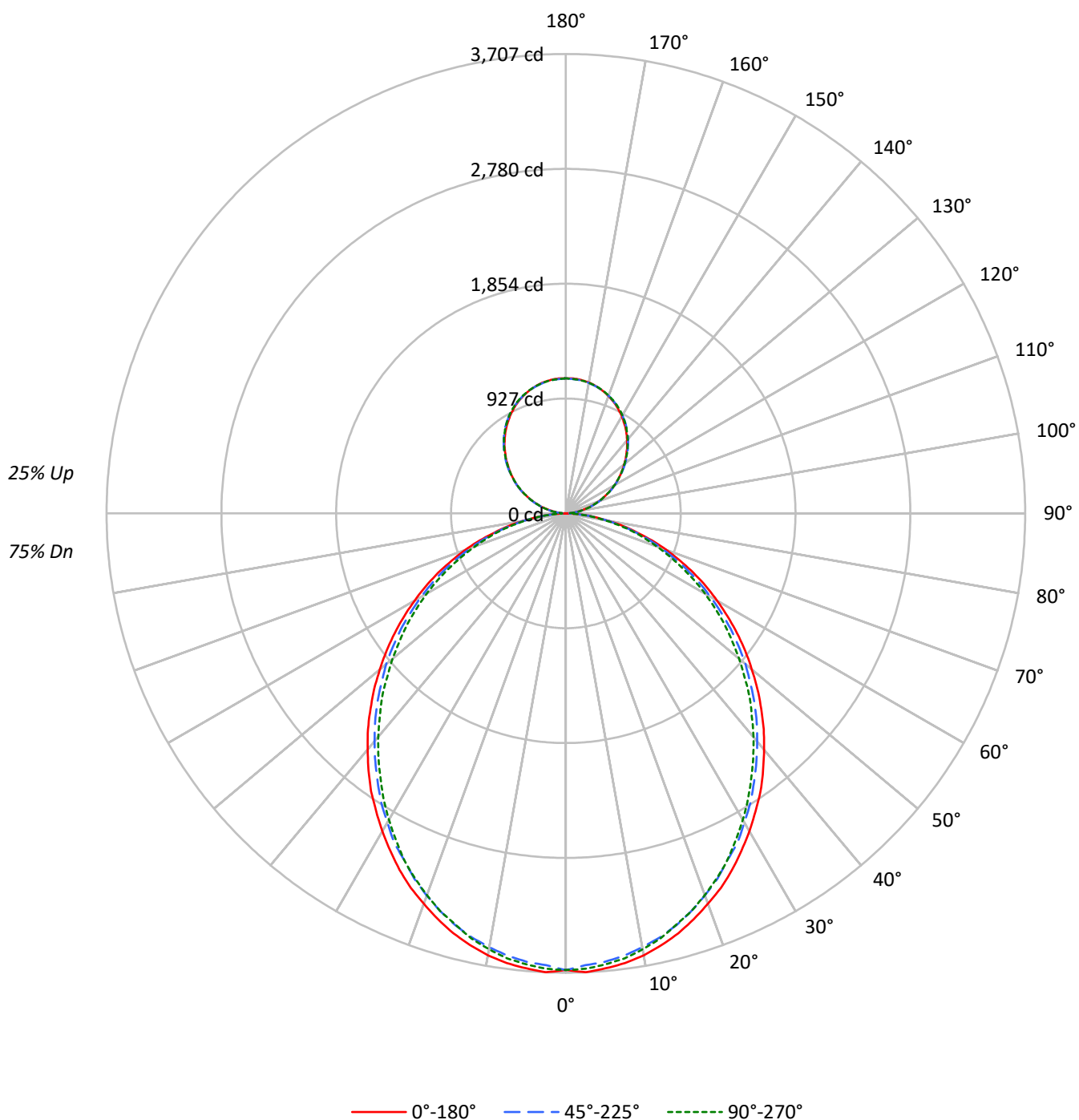
Lumens per Lamp: N/A
Luminaire Lumens: 12424.2 lumens
Efficiency: N/A
Efficacy: 91.4 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.54' x L: 4.09' x H: 0.1')
CIE Type: Semi-Direct

Input Watts (W): 136
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

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Luminous Intensity Polar Plot



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CATALOG NUMBER: DFN2DIP-HX4F0-110D040US935-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	113	113	113	113	108	108	108	108	97	97	97	88	88	88	80	80	80
1	104	99	95	91	98	94	91	88	86	83	80	78	76	74	70	69	67
2	94	87	80	75	89	83	77	72	75	71	67	68	65	62	62	59	57
3	86	76	68	62	82	73	66	60	66	61	56	60	56	52	55	51	48
4	79	68	59	53	75	65	57	51	59	53	48	54	49	45	49	45	42
5	73	60	52	46	69	58	50	44	53	46	42	48	43	39	44	40	36
6	67	54	46	40	63	52	44	39	48	41	36	44	38	34	40	36	32
7	62	49	41	35	59	47	40	34	44	37	32	40	34	30	37	32	29
8	58	45	37	31	55	43	36	30	40	33	29	37	31	27	34	29	26
9	54	41	33	28	51	40	32	27	37	30	26	34	28	25	31	27	23
10	50	38	30	25	48	36	29	25	34	28	23	31	26	22	29	24	21

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

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	346.9	2.8
10°-20°	975.9	7.9
20°-30°	1434.2	11.5
30°-40°	1665.7	13.4
40°-50°	1663.7	13.4
50°-60°	1450.7	11.7
60°-70°	1072.4	8.6
70°-80°	606.7	4.9
80°-90°	163.2	1.3
90°-100°	67.4	0.5
100°-110°	214.2	1.7
110°-120°	366.5	2.9
120°-130°	482.0	3.9
130°-140°	541.0	4.4
140°-150°	530.5	4.3
150°-160°	445.0	3.6
160°-170°	295.1	2.4
170°-180°	103.2	0.8
0°-30°	2757.0	22.2
0°-40°	4422.7	35.6
0°-60°	7537.0	60.7
0°-90°	9379.4	75.5
90°-120°	648.0	5.2
90°-150°	2201.5	17.7
90°-180°	3045.0	24.5
0°-180°	12424.2	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	12	32	30	31	12
95°	48	57	59	59	57	53
105°	198	200	202	204	204	209
115°	368	373	371	370	368	364
125°	535	543	540	538	537	478
135°	692	702	704	703	700	535
145°	840	846	852	853	849	525
155°	960	963	966	971	968	442
165°	1045	1044	1044	1050	1046	295
175°	1087	1085	1083	1089	1084	103
180°	1089	1089	1089	1089	1089	

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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°	0.9	11.8	32.2	30.2	31.2
92.5°	20.3	27.6	28.6	29.5	29.5
95°	48.0	57.2	58.8	58.8	57.2
97.5°	79.8	88.3	92.0	92.0	92.0
100°	116.6	124.2	126.7	126.7	125.8
102.5°	155.3	160.9	164.5	165.5	164.5
105°	197.7	200.3	202.2	203.9	203.9
107.5°	239.7	243.7	243.7	244.3	239.7
110°	280.4	285.7	285.7	285.7	283.1



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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	324.4	330.0	329.0	326.4	324.4
115°	367.7	373.1	371.3	370.4	367.7
117.5°	410.8	418.0	413.5	410.8	408.2
120°	454.2	461.3	454.2	454.2	451.2
122.5°	493.5	502.7	498.2	495.5	493.5
125°	534.9	543.1	540.5	537.5	536.6
127.5°	575.3	585.5	581.9	577.9	575.3
130°	613.0	624.9	623.3	621.3	617.7
132.5°	655.4	664.6	665.3	660.6	658.1
135°	691.9	702.1	704.0	703.0	700.4
137.5°	732.6	740.8	742.4	741.7	737.9
140°	768.4	776.6	781.2	781.2	777.6
142.5°	805.2	813.4	816.0	817.0	813.4
145°	840.0	846.5	851.8	852.8	849.2
147.5°	871.2	879.3	883.3	884.9	881.3
150°	903.4	909.0	912.6	915.5	912.6
152.5°	931.9	937.5	942.1	945.7	942.1
155°	960.4	963.1	966.0	970.7	967.7
157.5°	985.2	987.0	988.7	995.3	990.7
160°	1007.1	1009.1	1010.0	1015.6	1011.7
162.5°	1027.4	1027.4	1028.5	1034.7	1030.1
165°	1044.9	1043.9	1043.9	1050.4	1045.9
167.5°	1060.7	1057.6	1057.6	1064.3	1059.6
170°	1072.5	1069.8	1068.8	1075.4	1069.8
172.5°	1080.6	1078.1	1077.0	1083.7	1078.1
175°	1087.3	1084.6	1082.6	1089.2	1083.7
177.5°	1090.9	1088.2	1086.2	1091.8	1086.2
180°	1089.2	1089.2	1089.2	1089.2	1089.2

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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	12.86	14.01	13.56	14.73	15.58	12.43	13.57	13.13	14.30	15.15
	3H	14.54	15.57	15.26	16.30	17.19	14.07	15.10	14.78	15.83	16.72
	4H	15.14	16.11	15.87	16.86	17.76	14.67	15.64	15.40	16.38	17.28
	6H	15.56	16.46	16.30	17.21	18.12	15.08	15.98	15.83	16.73	17.64
	8H	15.67	16.53	16.43	17.30	18.21	15.19	16.05	15.95	16.82	17.74
	12H	15.73	16.55	16.49	17.31	18.25	15.25	16.06	16.01	16.83	17.77
4H	2H	13.35	14.33	14.09	15.07	15.97	13.01	13.98	13.75	14.73	15.62
	3H	15.25	16.06	16.00	16.84	17.75	14.85	15.67	15.60	16.44	17.36
	4H	15.97	16.71	16.74	17.49	18.44	15.57	16.31	16.33	17.09	18.03
	6H	16.50	17.15	17.29	17.95	18.90	16.09	16.74	16.88	17.54	18.49
	8H	16.66	17.26	17.45	18.06	19.03	16.25	16.85	17.04	17.65	18.61
	12H	16.75	17.29	17.56	18.11	19.08	16.33	16.87	17.14	17.69	18.66
8H	4H	16.19	16.79	16.98	17.59	18.56	15.83	16.43	16.62	17.23	18.20
	6H	16.84	17.33	17.65	18.18	19.14	16.47	16.97	17.29	17.81	18.78
	8H	17.06	17.50	17.89	18.34	19.33	16.69	17.13	17.52	17.97	18.96
	12H	17.21	17.60	18.04	18.43	19.47	16.82	17.21	17.65	18.04	19.08
12H	4H	16.19	16.73	17.00	17.55	18.52	15.84	16.38	16.65	17.20	18.17
	6H	16.87	17.31	17.70	18.15	19.13	16.52	16.96	17.35	17.80	18.78
	8H	17.13	17.52	17.96	18.35	19.39	16.77	17.16	17.60	17.99	19.03