

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: P928132

Luminaire Tested: DFN2DIP-HX4F0-120D040US850-FLLONL

Issue Date: 12/12/2024

Test Information

Test Method: LM-79-2019
Report Number: P928132
REPORT IS A COMBINATION OF REPORTS P900835 AND P896187
Test Lab: INNOVATION CENTER
Issue Date: 12/12/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-HX4F0-120D040US850-FLLONL
Description: 4 foot, Hexagon Define Geo, with Direct Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

Summary

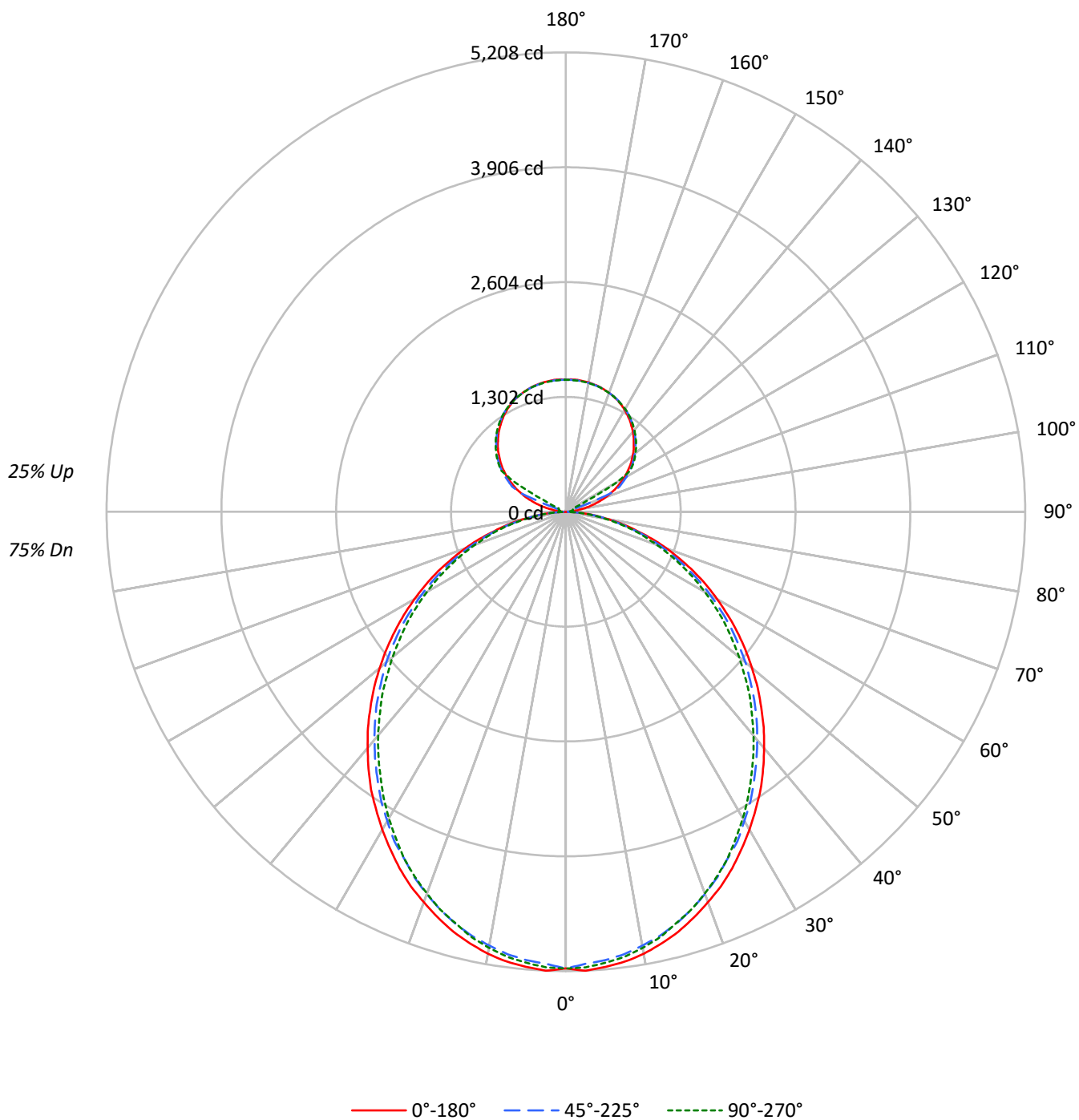
Lumens per Lamp: N/A
Luminaire Lumens: 17566.5 lumens
Efficiency: N/A
Efficacy: 112.4 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.54' x L: 4.09' x H: 0.1')
CIE Type: Semi-Direct

Input Watts (W): 156.3
Input Voltage (V):
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.9954
Total Harmonic Distortion (THDi): 0.076
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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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	79	79	79
1	103	99	95	91	98	94	91	87	85	83	80	77	75	73	70	68	67
2	94	86	80	75	89	82	77	72	75	70	66	68	64	61	62	59	56
3	86	76	68	62	81	73	66	60	66	61	56	60	56	52	55	51	48
4	79	67	59	53	75	64	57	51	59	53	48	54	49	45	49	45	41
5	72	60	52	46	69	58	50	44	53	46	41	48	43	39	44	40	36
6	67	54	46	40	63	52	44	39	48	41	36	44	38	34	40	35	32
7	62	49	41	35	59	47	39	34	43	37	32	40	34	30	37	32	28
8	58	45	37	31	55	43	36	30	40	33	29	37	31	27	34	29	25
9	54	41	33	28	51	39	32	27	37	30	26	34	28	24	31	26	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°	3850	3850	3850
5°	3857	3797	3822
10°	3826	3746	3771
15°	3770	3685	3690
20°	3694	3600	3608
25°	3619	3498	3512
30°	3524	3403	3391
35°	3435	3291	3262
40°	3325	3177	3140
45°	3215	3064	3015
50°	3095	2945	2870
55°	2969	2807	2736
60°	2827	2643	2584
65°	2672	2474	2404
70°	2475	2268	2211
75°	2202	2021	2032
80°	1873	1707	1690
85°	1359	1163	1124

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 3215 cd/sqm

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	487.4	2.8
10°-20°	1371.3	7.8
20°-30°	2015.2	11.5
30°-40°	2340.6	13.3
40°-50°	2337.7	13.3
50°-60°	2038.4	11.6
60°-70°	1506.8	8.6
70°-80°	852.5	4.9
80°-90°	227.6	1.3
90°-100°	49.4	0.3
100°-110°	184.0	1.0
110°-120°	488.1	2.8
120°-130°	809.5	4.6
130°-140°	859.9	4.9
140°-150°	799.2	4.5
150°-160°	642.5	3.7
160°-170°	414.0	2.4
170°-180°	142.5	0.8
0°-30°	3873.9	22.1
0°-40°	6214.5	35.4
0°-60°	10590.5	60.3
0°-90°	13177.5	75.0
90°-120°	721.5	4.1
90°-150°	3190.0	18.2
90°-180°	4389.0	25.0
0°-180°	17566.5	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	5178	5178	5178	5178	5178	
5°	5178	5159	5104	5143	5134	492
15°	4929	4900	4835	4855	4830	1388
25°	4461	4422	4337	4347	4337	2053
35°	3849	3799	3720	3690	3665	2404
45°	3132	3097	3022	2968	2948	2417
55°	2370	2340	2280	2221	2196	2119
65°	1599	1568	1519	1474	1449	1581
75°	836	827	801	772	782	893
85°	204	199	194	179	174	227
90°	1	13	22	27	29	16
95°	70	35	42	48	47	83
105°	329	362	66	78	82	352
115°	623	641	668	167	89	613
125°	881	895	915	923	926	785
135°	1090	1107	1117	1128	1126	842
145°	1264	1263	1281	1289	1284	791
155°	1392	1382	1395	1402	1393	641
165°	1467	1460	1464	1471	1464	414
175°	1500	1493	1495	1502	1492	143
180°	1497	1497	1497	1497	1497	

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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	5178.3	5178.3	5178.3	5178.3	5178.3
2.5°	5208.3	5183.5	5128.6	5178.3	5168.7
5°	5178.3	5158.6	5103.7	5143.3	5133.8
7.5°	5143.3	5113.7	5058.8	5099.0	5089.0
10°	5089.0	5054.0	4994.4	5034.0	5019.2
12.5°	5013.9	4984.3	4924.6	4949.5	4939.4
15°	4929.4	4899.8	4834.8	4854.9	4830.0
17.5°	4824.8	4795.2	4730.2	4755.1	4730.2
20°	4710.1	4680.5	4610.9	4625.6	4606.1
22.5°	4596.0	4551.1	4486.1	4486.1	4476.1
25°	4461.3	4421.7	4337.2	4346.7	4337.2
27.5°	4311.8	4277.0	4212.5	4197.7	4172.9
30°	4162.9	4122.7	4048.2	4033.4	4013.4
32.5°	4003.3	3973.8	3893.9	3863.9	3843.8
35°	3849.0	3799.4	3719.6	3689.5	3664.7
37.5°	3674.7	3629.9	3550.0	3515.2	3490.4
40°	3495.7	3455.5	3375.7	3331.3	3311.3
42.5°	3321.3	3281.2	3201.9	3151.8	3122.2
45°	3132.1	3097.3	3022.2	2967.9	2947.8
47.5°	2947.8	2912.9	2833.2	2778.3	2748.7
50°	2753.4	2728.6	2658.8	2589.1	2564.2
52.5°	2564.2	2529.4	2465.0	2410.0	2375.1
55°	2370.4	2340.3	2280.5	2220.9	2196.0
57.5°	2176.0	2151.1	2086.1	2026.5	2006.4
60°	1981.6	1962.0	1892.3	1837.4	1822.5
62.5°	1792.5	1757.5	1708.0	1658.3	1638.2
65°	1598.6	1568.5	1518.8	1473.9	1449.1
67.5°	1399.4	1374.1	1329.7	1294.9	1274.8
70°	1215.0	1194.9	1150.0	1115.2	1095.7
72.5°	1025.9	1005.9	981.0	946.2	931.3
75°	836.3	826.8	801.4	771.9	781.8
77.5°	667.2	647.1	637.1	622.3	607.5
80°	498.2	492.8	482.9	468.1	458.0
82.5°	338.6	338.6	333.9	313.8	313.8
85°	203.9	199.2	194.4	179.1	174.3
87.5°	89.8	79.7	69.8	54.9	49.7
90°	1.0	13.0	21.6	27.2	29.2
92.5°	27.2	22.7	26.0	28.2	29.2
95°	70.3	34.6	42.1	47.7	46.6
97.5°	126.8	37.9	55.2	58.6	59.6
100°	191.7	43.4	61.8	70.3	72.5
102.5°	263.2	261.2	63.9	75.7	79.1
105°	329.3	361.9	66.1	78.0	82.3
107.5°	406.2	433.3	68.3	80.2	84.5
110°	480.0	502.6	189.6	81.3	85.5

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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	549.3	568.7	550.3	83.4	86.7
115°	622.8	641.2	668.4	166.8	88.9
117.5°	686.8	708.4	726.9	571.9	288.1
120°	758.3	774.5	794.0	807.1	660.9
122.5°	818.9	836.3	858.0	864.5	865.6
125°	880.7	894.9	915.4	923.0	926.2
127.5°	937.0	952.2	968.5	979.4	980.4
130°	990.1	1007.5	1019.3	1031.3	1030.3
132.5°	1044.2	1058.4	1070.3	1080.1	1079.1
135°	1089.8	1107.2	1116.9	1127.7	1125.6
137.5°	1137.4	1150.4	1161.3	1172.1	1168.9
140°	1184.0	1192.7	1204.6	1214.4	1208.9
142.5°	1223.1	1230.7	1244.7	1253.3	1248.0
145°	1264.3	1263.2	1281.4	1289.1	1283.7
147.5°	1299.9	1296.6	1315.1	1320.5	1316.3
150°	1334.6	1327.0	1344.4	1350.9	1345.4
152.5°	1363.8	1355.2	1371.4	1377.9	1370.4
155°	1392.0	1382.4	1395.3	1401.8	1393.1
157.5°	1414.8	1406.1	1416.0	1423.5	1414.8
160°	1434.3	1427.7	1434.3	1440.7	1433.2
162.5°	1451.6	1445.1	1450.6	1458.1	1448.4
165°	1466.8	1460.3	1463.5	1471.1	1463.5
167.5°	1478.7	1472.1	1475.5	1483.1	1473.3
170°	1488.5	1482.0	1484.1	1491.7	1482.0
172.5°	1494.9	1488.5	1490.7	1498.3	1488.5
175°	1500.3	1492.7	1494.9	1502.5	1491.7
177.5°	1502.5	1494.9	1496.0	1503.7	1493.9
180°	1497.2	1497.2	1497.2	1497.2	1497.2

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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	14.00	15.15	14.71	15.87	16.74	13.57	14.71	14.28	15.44	16.30
	3H	15.69	16.71	16.41	17.45	18.35	15.21	16.24	15.93	16.98	17.87
	4H	16.29	17.26	17.03	18.00	18.91	15.81	16.78	16.55	17.53	18.44
	6H	16.70	17.60	17.45	18.35	19.27	16.23	17.12	16.98	17.88	18.80
	8H	16.81	17.67	17.58	18.44	19.37	16.34	17.19	17.10	17.97	18.89
	12H	16.87	17.69	17.64	18.46	19.41	16.39	17.20	17.16	17.98	18.93
4H	2H	14.50	15.47	15.24	16.22	17.12	14.15	15.12	14.90	15.87	16.78
	3H	16.39	17.20	17.15	17.98	18.91	16.00	16.81	16.75	17.59	18.52
	4H	17.12	17.85	17.89	18.64	19.59	16.71	17.45	17.48	18.23	19.19
	6H	17.65	18.29	18.44	19.10	20.06	17.24	17.88	18.03	18.69	19.65
	8H	17.81	18.40	18.60	19.21	20.18	17.39	17.99	18.19	18.80	19.77
	12H	17.89	18.43	18.71	19.26	20.23	17.47	18.01	18.28	18.83	19.81
8H	4H	17.34	17.93	18.13	18.74	19.71	16.98	17.57	17.77	18.38	19.35
	6H	17.98	18.48	18.80	19.32	20.30	17.62	18.11	18.44	18.96	19.93
	8H	18.21	18.65	19.04	19.49	20.48	17.84	18.28	18.67	19.12	20.11
	12H	18.35	18.74	19.19	19.57	20.62	17.97	18.35	18.80	19.19	20.24
12H	4H	17.34	17.87	18.15	18.70	19.68	16.98	17.52	17.80	18.35	19.33
	6H	18.01	18.45	18.85	19.30	20.29	17.66	18.10	18.50	18.95	19.94
	8H	18.27	18.66	19.11	19.49	20.54	17.91	18.30	18.75	19.14	20.18