

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: P911617

Luminaire Tested: DFN2DIP-PN4F0-120D040US850-FLLONL

Issue Date: 11/21/2024

**Test Information**

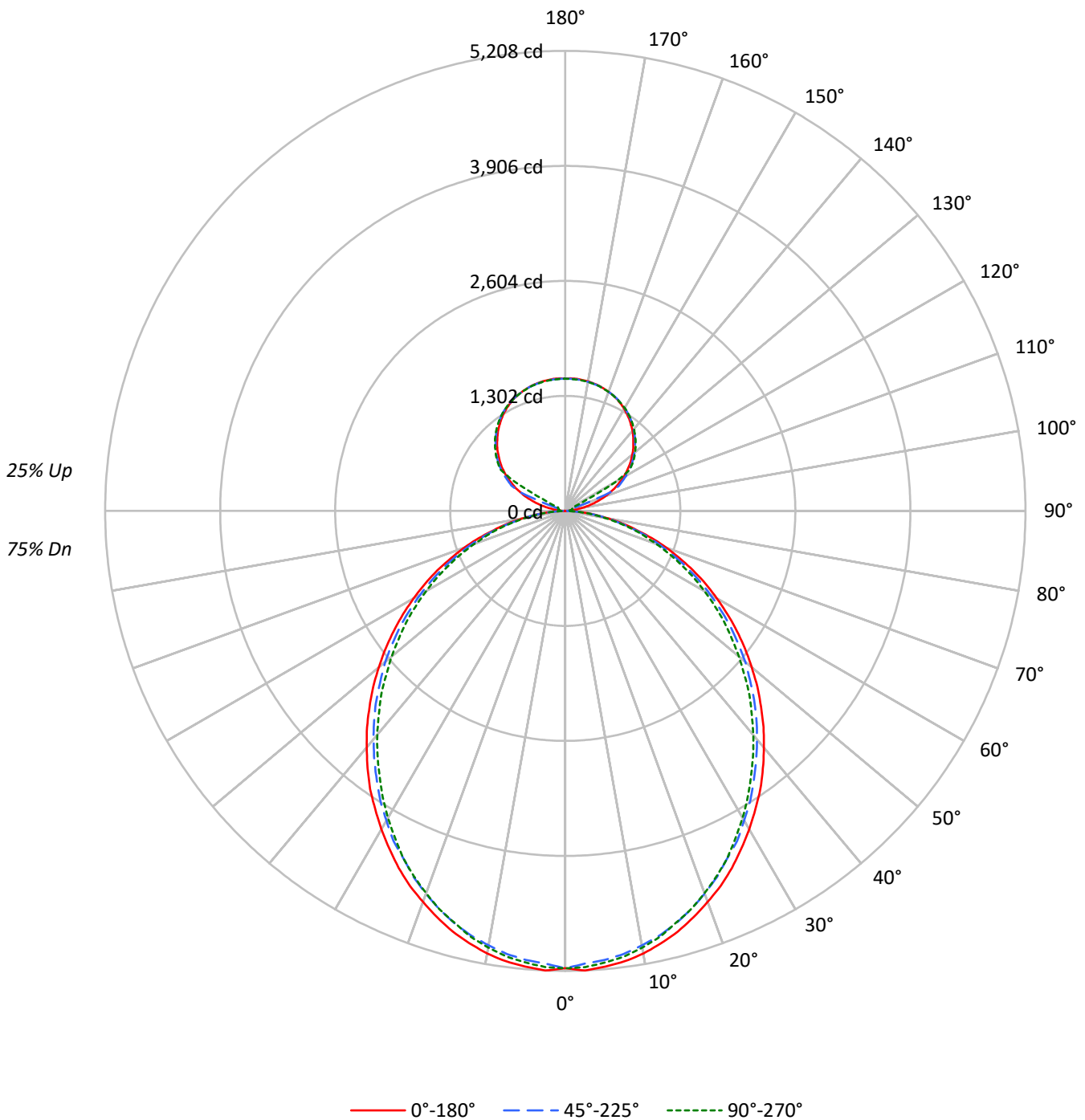
Test Method: LM-79-2019  
Report Number: P911617  
REPORT IS A COMBINATION OF REPORTS P901145 AND P898053  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-PN4F0-120D040US850-FLONL  
Description: 4 foot, Pentagon 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: 112.2 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
Luminous Opening: Rectangular w/ Sides (W: 3.74' x L: 3.94' x H: 0.1')  
CIE Type: Semi-Direct  
  
Input Watts (W): 156.6  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9781  
Total Harmonic Distortion (THDi): 0.075  
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			0	
RW	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	50	30	10	0
RCR																					
0	113	113	113	113	108	108	108	108	97	97	97	88	88	88	79	79	79	79	79	79	75
1	103	99	95	91	98	94	91	87	85	83	80	77	75	73	70	68	67	67	67	67	63
2	94	86	80	75	89	82	77	72	75	70	66	68	64	61	62	59	56	56	56	56	53
3	86	76	68	62	81	73	66	60	66	61	56	60	56	52	55	51	48	48	48	48	45
4	79	67	59	53	75	64	57	51	59	53	48	54	49	45	49	45	41	41	41	41	39
5	72	60	52	46	69	58	50	44	53	46	41	48	43	39	44	40	36	36	36	36	33
6	67	54	46	40	63	52	44	39	48	41	36	44	38	34	40	35	32	32	32	32	29
7	62	49	41	35	59	47	39	34	43	37	32	40	34	30	37	32	28	28	28	28	26
8	58	45	37	31	55	43	36	30	40	33	29	37	31	27	34	29	25	25	25	25	23
9	54	41	33	28	51	39	32	27	37	30	26	34	28	24	31	26	23	23	23	23	21
10	50	38	30	25	48	36	29	25	34	28	23	31	26	22	29	24	21	21	21	21	19

**AVERAGE LUMINANCE (cd/sqm):**

	0°	45°	90°
0°	3780	3780	3780
5°	3786	3728	3753
10°	3755	3678	3703
15°	3700	3618	3624
20°	3625	3534	3544
25°	3551	3434	3450
30°	3458	3341	3331
35°	3370	3231	3206
40°	3262	3120	3086
45°	3153	3009	2964
50°	3035	2892	2822
55°	2911	2757	2692
60°	2771	2597	2543
65°	2619	2431	2367
70°	2424	2229	2179
75°	2154	1987	2005
80°	1831	1679	1672
85°	1324	1146	1118

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 3153 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	13.95	15.09	14.65	15.82	16.68	13.51	14.65	14.21	15.38	16.24
	3H	15.63	16.66	16.35	17.39	18.29	15.15	16.17	15.87	16.91	17.80
	4H	16.23	17.20	16.97	17.95	18.86	15.74	16.71	16.48	17.46	18.37
	6H	16.65	17.54	17.40	18.30	19.22	16.16	17.05	16.91	17.81	18.73
	8H	16.76	17.61	17.53	18.39	19.31	16.27	17.12	17.03	17.90	18.82
	12H	16.82	17.63	17.59	18.40	19.36	16.32	17.13	17.09	17.90	18.86
4H	2H	14.44	15.41	15.18	16.16	17.06	14.09	15.06	14.83	15.81	16.71
	3H	16.33	17.14	17.09	17.93	18.85	15.93	16.74	16.69	17.52	18.45
	4H	17.06	17.80	17.83	18.58	19.54	16.64	17.38	17.42	18.16	19.12
	6H	17.60	18.23	18.39	19.04	20.00	17.17	17.81	17.96	18.62	19.58
	8H	17.75	18.35	18.55	19.15	20.13	17.33	17.92	18.12	18.73	19.70
	12H	17.84	18.38	18.66	19.21	20.18	17.40	17.94	18.22	18.77	19.74
8H	4H	17.28	17.88	18.07	18.68	19.66	16.91	17.51	17.70	18.31	19.28
	6H	17.93	18.42	18.75	19.27	20.24	17.55	18.05	18.37	18.89	19.87
	8H	18.15	18.59	18.99	19.44	20.43	17.77	18.21	18.60	19.05	20.04
	12H	18.30	18.69	19.14	19.52	20.57	17.90	18.29	18.73	19.12	20.17
12H	4H	17.28	17.82	18.09	18.64	19.62	16.92	17.45	17.73	18.28	19.26
	6H	17.96	18.40	18.79	19.25	20.24	17.60	18.04	18.43	18.88	19.87
	8H	18.22	18.61	19.05	19.44	20.49	17.85	18.23	18.68	19.07	20.12