

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: P906055

Luminaire Tested: DFN2DIP-PN4F0-090D040US835-RLLONL

Issue Date: 11/21/2024

**Test Information**

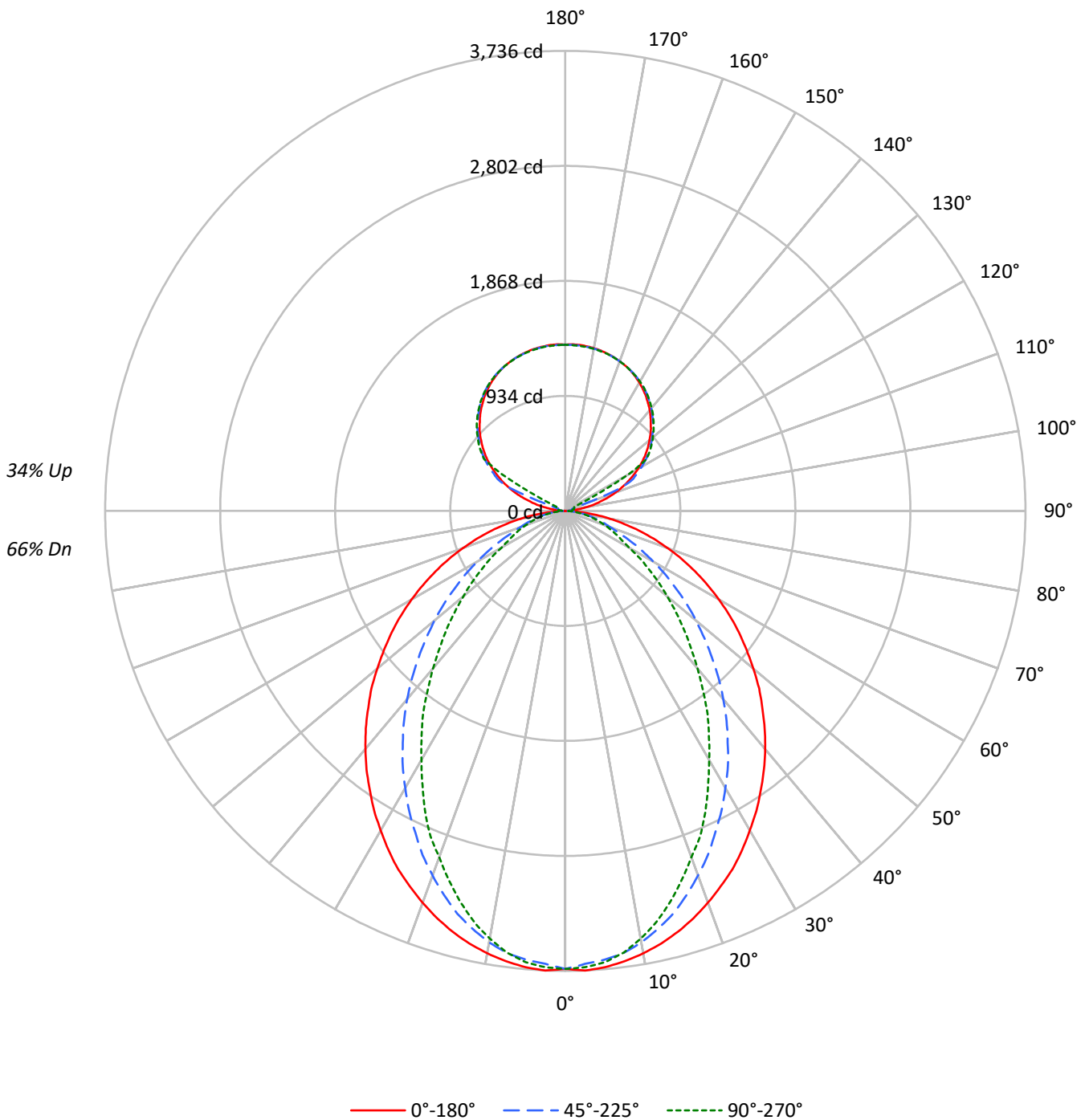
Test Method: LM-79-2019  
Report Number: P906055  
REPORT IS A COMBINATION OF REPORTS P901140 AND P898053  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-PN4F0-090D040US835-RLONL  
Description: 4 foot, Pentagon Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 11610.0 lumens  
Efficiency: N/A  
Efficacy: 97.8 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 3.74' x L: 3.94' x H: 0.1')  
CIE Type: Semi-Direct  
  
Input Watts (W): 118.7  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9963  
Total Harmonic Distortion (THDi): 0.065  
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	111	111	111	111	104	104	104	104	92	92	92	81	81	81	71	71	71	66			66
1	102	98	94	91	96	92	89	86	82	79	77	72	71	69	64	62	61	57			57
2	93	86	80	75	88	81	76	72	73	68	65	64	61	59	57	54	52	49			49
3	86	76	69	63	80	72	66	61	65	60	55	57	54	50	51	48	45	42			42
4	79	68	60	54	74	65	58	52	58	52	48	52	47	44	46	42	40	37			37
5	73	61	53	47	68	58	51	45	52	46	42	47	42	38	42	38	35	32			32
6	67	55	47	41	63	52	45	40	47	41	37	43	38	34	38	34	31	29			29
7	62	50	42	37	59	48	40	35	43	37	33	39	34	30	35	31	28	26			26
8	58	46	38	33	55	44	37	32	40	34	29	36	31	27	32	28	25	23			23
9	54	42	35	29	51	40	33	29	37	31	27	33	28	25	30	26	23	21			21
10	51	39	32	27	48	37	30	26	34	28	24	31	26	23	28	24	21	19			19

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

	0°	45°	90°
0°	2715	2715	2715
5°	2720	2673	2690
10°	2693	2620	2603
15°	2656	2534	2468
20°	2607	2415	2302
25°	2556	2282	2142
30°	2489	2145	1939
35°	2423	1997	1761
40°	2356	1845	1556
45°	2277	1676	1371
50°	2197	1505	1189
55°	2112	1323	1015
60°	2015	1132	836
65°	1902	938	753
70°	1766	757	682
75°	1595	668	622
80°	1348	561	541
85°	939	377	410

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 2277 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	348.6	3.0
10°-20°	957.0	8.2
20°-30°	1343.6	11.6
30°-40°	1464.6	12.6
40°-50°	1346.2	11.6
50°-60°	1057.2	9.1
60°-70°	688.1	5.9
70°-80°	354.2	3.1
80°-90°	92.8	0.8
90°-100°	44.5	0.4
100°-110°	165.9	1.4
110°-120°	440.1	3.8
120°-130°	729.9	6.3
130°-140°	775.4	6.7
140°-150°	720.6	6.2
150°-160°	579.4	5.0
160°-170°	373.3	3.2
170°-180°	128.5	1.1
0°-30°	2649.2	22.8
0°-40°	4113.9	35.4
0°-60°	6517.2	56.1
0°-90°	7652.4	65.9
90°-120°	650.5	5.6
90°-150°	2876.4	24.8
90°-180°	3958.0	34.1
0°-180°	11610.0	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	3720	3720	3720	3720	3720	
5°	3720	3703	3659	3689	3679	353
15°	3538	3501	3386	3322	3289	997
25°	3212	3104	2882	2744	2693	1477
35°	2767	2595	2299	2087	2013	1732
45°	2262	2036	1683	1444	1363	1747
55°	1720	1458	1094	892	828	1537
65°	1161	889	586	471	461	1151
75°	619	384	269	246	242	655
85°	145	74	64	64	64	166
90°	1	12	20	24	26	11
95°	63	31	38	43	42	75
105°	297	326	60	70	74	317
115°	562	578	603	150	80	553
125°	794	807	825	832	835	708
135°	983	998	1007	1017	1015	759
145°	1140	1139	1156	1162	1158	713
155°	1255	1246	1258	1264	1256	578
165°	1323	1317	1320	1326	1320	374
175°	1353	1346	1348	1355	1345	129
180°	1350	1350	1350	1350	1350	



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**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°
0°	3719.7	3719.7	3719.7	3719.7	3719.7
2.5°	3736.5	3719.7	3682.5	3716.5	3709.7
5°	3719.7	3702.9	3659.0	3689.3	3679.3
7.5°	3689.3	3669.3	3622.2	3635.4	3618.6
10°	3649.0	3625.4	3558.3	3547.9	3527.9
12.5°	3598.6	3568.3	3477.2	3457.2	3420.0
15°	3537.9	3500.8	3386.5	3322.5	3289.0
17.5°	3467.2	3413.3	3271.8	3197.9	3144.0
20°	3386.5	3319.0	3150.7	3066.8	2992.5
22.5°	3299.0	3221.5	3026.1	2911.8	2861.5
25°	3211.5	3103.6	2881.5	2743.6	2692.9
27.5°	3107.2	2992.5	2746.8	2588.6	2511.1
30°	2996.1	2867.9	2598.6	2427.2	2336.1
32.5°	2888.2	2733.2	2457.5	2255.4	2171.1
35°	2767.2	2595.4	2299.3	2087.2	2012.9
37.5°	2649.3	2464.0	2151.1	1918.6	1834.7
40°	2524.7	2322.9	1996.1	1757.2	1669.7
42.5°	2396.8	2181.5	1841.4	1592.2	1508.2
45°	2262.2	2036.5	1683.2	1443.9	1363.2
47.5°	2134.3	1895.4	1531.8	1292.5	1218.6
50°	1992.9	1753.9	1383.6	1151.1	1080.7
52.5°	1854.7	1602.2	1242.2	1020.0	956.1
55°	1720.0	1457.5	1093.9	892.2	828.2
57.5°	1582.2	1312.9	962.9	774.3	720.4
60°	1440.7	1171.4	824.7	653.2	599.3
62.5°	1302.9	1033.6	706.8	545.4	518.6
65°	1161.4	888.6	585.7	471.4	461.1
67.5°	1026.8	753.9	471.4	413.9	403.9
70°	885.4	622.9	390.4	356.8	343.2
72.5°	750.7	501.4	326.4	299.6	292.9
75°	619.3	383.6	269.3	245.7	242.5
77.5°	488.2	272.5	212.1	198.6	191.8
80°	366.8	195.4	161.4	148.2	148.2
82.5°	255.7	131.4	111.1	104.3	104.3
85°	144.6	73.9	63.9	63.9	63.9
87.5°	53.9	26.8	26.8	23.6	23.6
90°	0.9	11.7	19.5	24.5	26.3
92.5°	24.5	20.5	23.4	25.4	26.3
95°	63.4	31.2	38.0	43.0	42.0
97.5°	114.3	34.2	49.8	52.8	53.7
100°	172.9	39.1	55.7	63.4	65.4
102.5°	237.3	235.5	57.6	68.3	71.3
105°	296.9	326.3	59.6	70.3	74.2
107.5°	366.3	390.7	61.6	72.3	76.2
110°	432.8	453.2	171.0	73.3	77.1



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**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°
112.5°	495.3	512.8	496.2	75.2	78.2
115°	561.6	578.2	602.7	150.4	80.2
117.5°	619.3	638.8	655.5	515.7	259.8
120°	683.8	698.4	716.0	727.8	595.9
122.5°	738.4	754.1	773.7	779.5	780.5
125°	794.1	806.9	825.4	832.3	835.2
127.5°	844.9	858.6	873.3	883.1	884.0
130°	892.8	908.5	919.1	929.9	929.0
132.5°	941.6	954.4	965.1	973.9	973.0
135°	982.7	998.4	1007.1	1016.9	1015.0
137.5°	1025.6	1037.3	1047.2	1056.9	1054.0
140°	1067.6	1075.5	1086.2	1095.0	1090.1
142.5°	1102.9	1109.7	1122.4	1130.1	1125.3
145°	1140.0	1139.0	1155.5	1162.4	1157.5
147.5°	1172.1	1169.2	1185.8	1190.7	1186.9
150°	1203.4	1196.6	1212.3	1218.1	1213.2
152.5°	1229.8	1222.0	1236.6	1242.5	1235.7
155°	1255.2	1246.5	1258.2	1264.0	1256.2
157.5°	1275.7	1267.9	1276.8	1283.6	1275.7
160°	1293.3	1287.4	1293.3	1299.1	1292.3
162.5°	1308.9	1303.1	1308.0	1314.8	1306.0
165°	1322.6	1316.8	1319.7	1326.5	1319.7
167.5°	1333.4	1327.4	1330.5	1337.3	1328.5
170°	1342.2	1336.3	1338.2	1345.1	1336.3
172.5°	1348.0	1342.2	1344.2	1351.0	1342.2
175°	1352.8	1346.0	1348.0	1354.8	1345.1
177.5°	1354.8	1348.0	1349.0	1355.9	1347.1
180°	1350.0	1350.0	1350.0	1350.0	1350.0



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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	11.99	12.97	12.81	13.81	14.83	7.96	8.94	8.77	9.77	10.80
	3H	13.69	14.56	14.51	15.40	16.46	9.16	10.04	9.99	10.88	11.93
	4H	14.30	15.13	15.15	15.98	17.05	9.62	10.44	10.46	11.29	12.36
	6H	14.74	15.50	15.59	16.35	17.43	9.95	10.71	10.80	11.56	12.64
	8H	14.87	15.59	15.73	16.47	17.55	10.04	10.77	10.91	11.64	12.72
	12H	14.94	15.62	15.81	16.49	17.60	10.09	10.78	10.96	11.65	12.75
4H	2H	12.03	12.86	12.88	13.71	14.77	8.57	9.40	9.42	10.25	11.32
	3H	13.88	14.56	14.74	15.45	16.53	9.94	10.63	10.80	11.51	12.59
	4H	14.58	15.20	15.45	16.08	17.19	10.49	11.12	11.37	12.00	13.11
	6H	15.10	15.64	15.99	16.54	17.66	10.92	11.46	11.81	12.36	13.48
	8H	15.28	15.79	16.17	16.68	17.81	11.05	11.56	11.95	12.45	13.58
	12H	15.39	15.84	16.30	16.75	17.88	11.13	11.58	12.04	12.50	13.63
8H	4H	14.56	15.06	15.45	15.96	17.08	10.79	11.29	11.68	12.19	13.31
	6H	15.13	15.55	16.05	16.49	17.61	11.31	11.73	12.23	12.67	13.79
	8H	15.35	15.72	16.28	16.65	17.79	11.50	11.87	12.43	12.80	13.95
	12H	15.50	15.82	16.43	16.74	17.94	11.63	11.95	12.56	12.88	14.07
12H	4H	14.51	14.97	15.42	15.88	17.01	10.80	11.25	11.71	12.17	13.30
	6H	15.11	15.47	16.03	16.41	17.55	11.36	11.73	12.29	12.66	13.80
	8H	15.34	15.66	16.27	16.58	17.78	11.58	11.90	12.51	12.83	14.02