

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: P923936

Luminaire Tested: DFN2DIP-TR4F0-120D060US940-RLLFLL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P923936
REPORT IS A COMBINATION OF REPORTS P900422 AND P897293
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-TR4F0-120D060US940-RLLFLL
Description: 4 foot, Triangle Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Frosted Lens
Light Source: -
Ballast/Driver: -

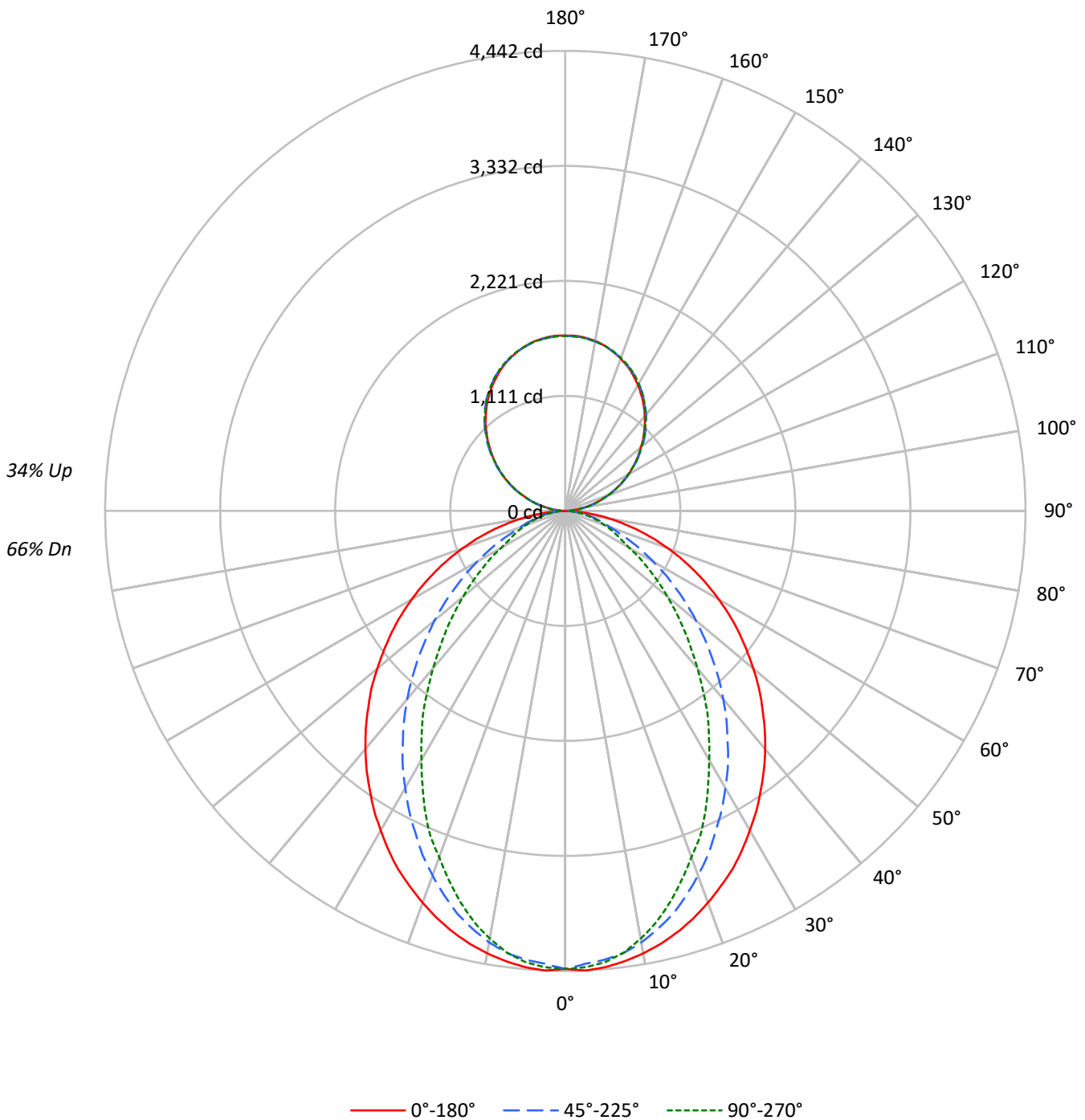
Summary

Lumens per Lamp: N/A
Luminaire Lumens: 13830.4 lumens
Efficiency: N/A
Efficacy: 81.2 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16
Luminous Opening: Rectangular w/ Sides (W: 3.43' x L: 3.96' x H: 0.1')
CIE Type: Semi-Direct

Input Watts (W): 170.4
Input Voltage (V):
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.9821
Total Harmonic Distortion (THDi): 0.08
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				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	70	69	63	62	61	57				57
2	93	86	80	75	88	81	76	72	72	68	65	64	61	58	57	54	52	49				49
3	86	76	69	63	80	72	66	61	65	59	55	57	53	50	51	48	45	42				42
4	79	68	60	54	74	65	58	52	58	52	48	52	47	44	46	42	40	36				36
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	42	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	36	31	27	33	28	25	30	26	23	21				21
10	51	39	31	27	48	37	30	26	34	28	24	31	26	23	28	24	21	19				19

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	3513	3513	3513
5°	3519	3458	3480
10°	3484	3390	3366
15°	3436	3278	3191
20°	3373	3123	2976
25°	3308	2950	2769
30°	3221	2773	2506
35°	3135	2582	2274
40°	3048	2384	2009
45°	2947	2165	1769
50°	2843	1944	1535
55°	2734	1707	1309
60°	2608	1460	1078
65°	2462	1209	970
70°	2286	975	877
75°	2065	859	798
80°	1745	721	692
85°	1216	481	519

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°
 Vertical Angle: 45°
 Luminance: 2947 cd/sqm



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	414.5	3.0
10°-20°	1137.8	8.2
20°-30°	1597.5	11.6
30°-40°	1741.4	12.6
40°-50°	1600.5	11.6
50°-60°	1256.9	9.1
60°-70°	818.2	5.9
70°-80°	421.2	3.0
80°-90°	112.3	0.8
90°-100°	104.7	0.8
100°-110°	332.7	2.4
110°-120°	569.3	4.1
120°-130°	748.8	5.4
130°-140°	840.5	6.1
140°-150°	824.2	6.0
150°-160°	691.4	5.0
160°-170°	458.5	3.3
170°-180°	160.3	1.2
0°-30°	3149.8	22.8
0°-40°	4891.2	35.4
0°-60°	7748.6	56.0
0°-90°	9100.2	65.8
90°-120°	1006.7	7.3
90°-150°	3420.1	24.7
90°-180°	4730.0	34.2
0°-180°	13830.4	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	4422	4422	4422	4422	4422	
5°	4422	4403	4350	4386	4375	419
15°	4206	4162	4026	3950	3910	1185
25°	3818	3690	3426	3262	3202	1756
35°	3290	3086	2734	2482	2393	2059
45°	2690	2421	2001	1717	1621	2077
55°	2045	1733	1301	1061	985	1827
65°	1381	1056	696	560	548	1369
75°	736	456	320	292	288	779
85°	172	88	76	76	76	197
90°	2	18	50	47	48	14
95°	74	89	91	91	89	83
105°	307	311	314	317	317	324
115°	571	580	577	575	571	565
125°	831	844	840	835	834	743
135°	1075	1091	1094	1092	1088	831
145°	1305	1315	1323	1325	1319	815
155°	1492	1496	1501	1508	1503	687
165°	1623	1622	1622	1632	1625	458
175°	1689	1685	1682	1692	1683	160
180°	1692	1692	1692	1692	1692	



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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	4422.5	4422.5	4422.5	4422.5	4422.5
2.5°	4442.5	4422.5	4378.4	4418.7	4410.6
5°	4422.5	4402.6	4350.3	4386.4	4374.6
7.5°	4386.4	4362.6	4306.6	4322.3	4302.3
10°	4338.4	4310.4	4230.5	4218.2	4194.5
12.5°	4278.5	4242.5	4134.1	4110.4	4066.3
15°	4206.4	4162.2	4026.3	3950.3	3910.4
17.5°	4122.3	4058.2	3890.0	3802.2	3738.0
20°	4026.3	3946.1	3746.1	3646.3	3557.9
22.5°	3922.3	3830.2	3597.9	3462.0	3402.1
25°	3818.3	3690.0	3425.9	3262.0	3201.7
27.5°	3694.3	3557.9	3265.8	3077.7	2985.5
30°	3562.2	3409.8	3089.6	2885.8	2777.5
32.5°	3434.0	3249.7	2921.9	2681.6	2581.3
35°	3290.1	3085.8	2733.7	2481.5	2393.2
37.5°	3149.9	2929.5	2557.5	2281.1	2181.3
40°	3001.7	2761.8	2373.3	2089.2	1985.1
42.5°	2849.6	2593.6	2189.4	1893.0	1793.2
45°	2689.6	2421.3	2001.3	1716.8	1620.8
47.5°	2537.5	2253.5	1821.2	1536.8	1448.9
50°	2369.5	2085.4	1645.0	1368.6	1285.0
52.5°	2205.1	1904.9	1476.9	1212.7	1136.8
55°	2045.0	1732.9	1300.6	1060.7	984.7
57.5°	1881.1	1560.9	1144.8	920.6	856.5
60°	1713.0	1392.8	980.4	776.7	712.6
62.5°	1549.1	1228.9	840.3	648.5	616.5
65°	1380.9	1056.5	696.4	560.5	548.2
67.5°	1220.8	896.3	560.5	492.1	480.3
70°	1052.7	740.6	464.1	424.2	408.0
72.5°	892.6	596.2	388.1	356.2	348.2
75°	736.3	456.0	320.2	292.1	288.3
77.5°	580.5	324.0	252.3	236.1	228.0
80°	436.1	232.3	191.9	176.2	176.2
82.5°	304.1	156.2	132.1	123.9	123.9
85°	172.0	87.9	76.0	76.0	76.0
87.5°	64.1	31.8	31.8	28.0	28.0
90°	1.5	18.4	50.0	46.9	48.4
92.5°	31.7	42.9	44.4	45.9	45.9
95°	74.5	88.7	91.3	91.3	88.7
97.5°	123.9	137.2	142.9	142.9	142.9
100°	181.1	192.8	196.9	196.9	195.4
102.5°	241.3	249.9	255.6	257.1	255.6
105°	307.1	311.2	314.2	316.8	316.8
107.5°	372.4	378.5	378.5	379.5	372.4
110°	435.7	443.8	443.8	443.8	439.7



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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	504.0	512.6	511.1	507.0	504.0
115°	571.3	579.5	576.9	575.4	571.3
117.5°	638.2	649.4	642.2	638.2	634.1
120°	705.5	716.8	705.5	705.5	700.9
122.5°	766.7	781.0	773.8	769.8	766.7
125°	831.0	843.7	839.6	835.1	833.6
127.5°	893.8	909.5	903.9	897.9	893.8
130°	952.4	970.8	968.2	965.2	959.6
132.5°	1018.2	1032.5	1033.5	1026.4	1022.3
135°	1074.9	1090.7	1093.7	1092.2	1088.1
137.5°	1138.1	1150.8	1153.4	1152.4	1146.3
140°	1193.7	1206.5	1213.6	1213.6	1208.0
142.5°	1250.8	1263.6	1267.7	1269.2	1263.6
145°	1304.9	1315.1	1323.3	1324.8	1319.2
147.5°	1353.3	1366.1	1372.3	1374.7	1369.1
150°	1403.4	1412.0	1417.6	1422.2	1417.6
152.5°	1447.7	1456.4	1463.6	1469.2	1463.6
155°	1492.1	1496.2	1500.7	1508.0	1503.3
157.5°	1530.4	1533.5	1536.0	1546.2	1539.1
160°	1564.6	1567.6	1569.1	1577.8	1571.7
162.5°	1596.2	1596.2	1597.7	1607.4	1600.3
165°	1623.2	1621.7	1621.7	1631.9	1624.8
167.5°	1647.7	1643.2	1643.2	1653.3	1646.2
170°	1666.1	1662.0	1660.5	1670.6	1662.0
172.5°	1678.8	1674.7	1673.2	1683.4	1674.7
175°	1689.0	1685.0	1681.9	1692.1	1683.4
177.5°	1694.6	1690.6	1687.5	1696.1	1687.5
180°	1692.1	1692.1	1692.1	1692.1	1692.1



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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	12.87	13.85	13.68	14.68	15.71	8.84	9.82	9.66	10.65	11.68
	3H	14.56	15.43	15.39	16.27	17.33	10.04	10.92	10.87	11.76	12.82
	4H	15.17	16.00	16.02	16.85	17.92	10.50	11.33	11.35	12.18	13.24
	6H	15.60	16.36	16.46	17.22	18.30	10.83	11.59	11.69	12.45	13.53
	8H	15.73	16.45	16.60	17.33	18.41	10.92	11.65	11.79	12.52	13.60
	12H	15.80	16.49	16.67	17.35	18.46	10.97	11.66	11.84	12.53	13.64
4H	2H	12.90	13.73	13.75	14.58	15.65	9.45	10.28	10.31	11.13	12.20
	3H	14.75	15.43	15.61	16.32	17.40	10.82	11.50	11.68	12.39	13.47
	4H	15.44	16.07	16.32	16.95	18.06	11.37	12.00	12.25	12.88	13.99
	6H	15.97	16.50	16.86	17.41	18.52	11.80	12.34	12.69	13.24	14.36
	8H	16.15	16.65	17.04	17.55	18.67	11.93	12.44	12.83	13.33	14.46
	12H	16.25	16.70	17.16	17.62	18.75	12.01	12.46	12.92	13.38	14.51
8H	4H	15.42	15.92	16.32	16.82	17.95	11.66	12.17	12.56	13.06	14.19
	6H	15.99	16.41	16.91	17.35	18.48	12.19	12.60	13.11	13.54	14.67
	8H	16.21	16.58	17.14	17.51	18.66	12.38	12.75	13.31	13.68	14.83
	12H	16.36	16.68	17.29	17.60	18.80	12.51	12.83	13.44	13.76	14.95
12H	4H	15.38	15.83	16.29	16.75	17.88	11.68	12.13	12.59	13.05	14.18
	6H	15.97	16.34	16.90	17.27	18.41	12.24	12.61	13.17	13.54	14.68
	8H	16.20	16.52	17.13	17.45	18.64	12.46	12.78	13.39	13.70	14.90