

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: P902162

Luminaire Tested: DFN2DIP-4P2F0-040D020US830-FLLFLL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P902162
REPORT IS A COMBINATION OF REPORTS P899015 AND P895899
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-4P2F0-040D020US830-FLLFLL
Description: 2 foot, 90deg - 4way Define Geo, with Direct Frosted Lens, Indirect Frosted Lens
Light Source: -
Ballast/Driver: -

Summary

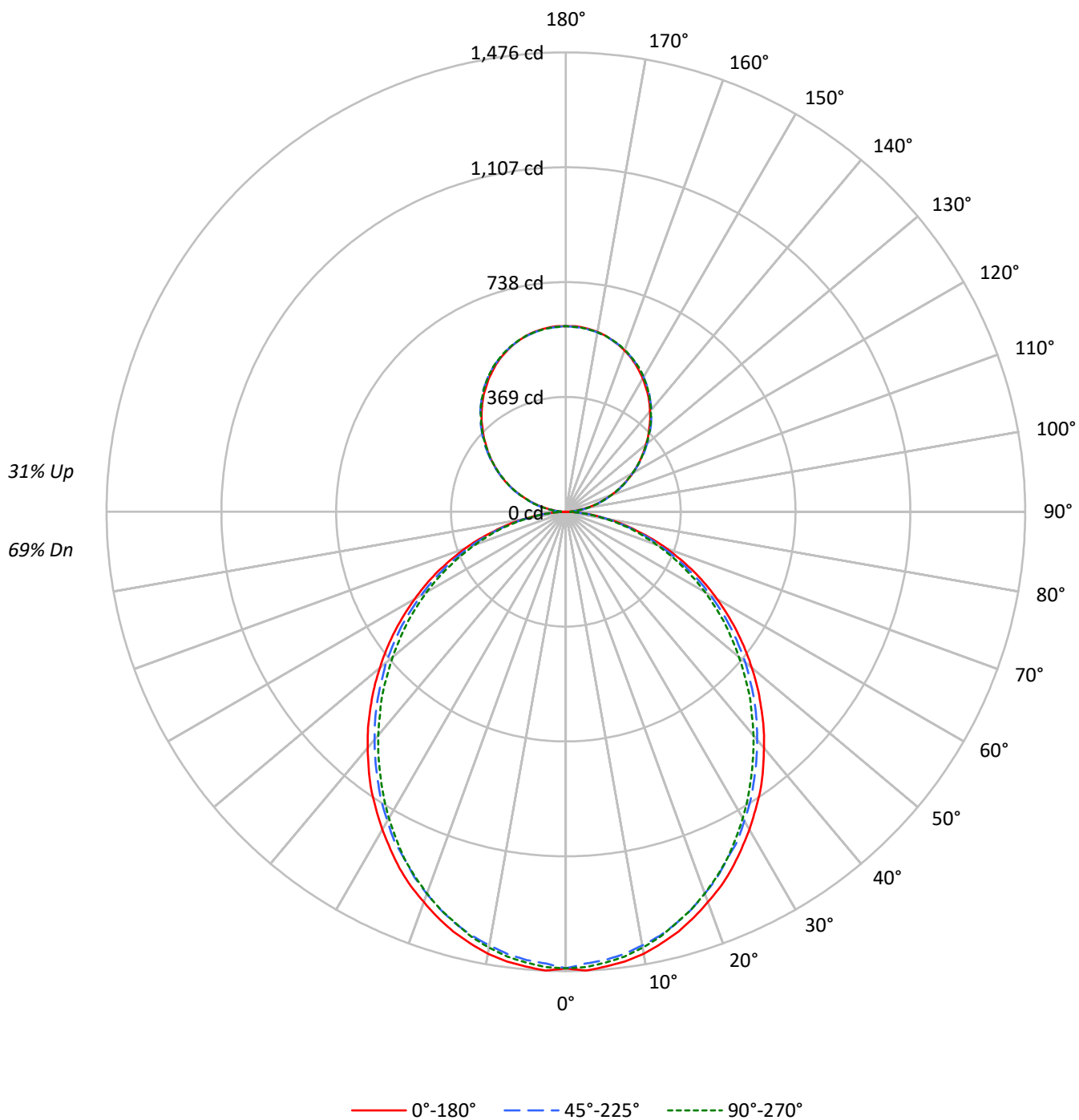
Lumens per Lamp: N/A
Luminaire Lumens: 5400.8 lumens
Efficiency: N/A
Efficacy: 96.3 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 2.07' x L: 2.07' x H: 0.1')
CIE Type: Semi-Direct

Input Watts (W): 56.1
Input Voltage (V): 120
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.983
Total Harmonic Distortion (THDi): 0.073
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 24 FT

TEST NUMBER: P902162

CATALOG NUMBER: DFN2DIP-4P2F0-040D020US830-FLLFLL

Luminous Intensity Polar Plot



TEST NUMBER: P902162

CATALOG NUMBER: DFN2DIP-4P2F0-040D020US830-FLLFLL

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	112	112	112	112	106	106	106	106	94	94	94	83	83	83	74	74	74
1	102	98	94	90	96	92	89	86	83	80	77	74	71	70	65	64	62
2	93	85	79	74	88	81	75	70	72	68	64	65	61	58	57	55	52
3	85	75	67	61	80	71	64	59	64	58	54	57	53	49	51	48	45
4	78	67	58	52	73	63	56	50	57	51	46	51	46	42	46	42	39
5	71	59	51	45	67	56	49	43	51	45	40	46	41	37	41	37	34
6	66	53	45	39	62	51	43	38	46	40	35	41	36	32	37	33	30
7	61	48	40	34	58	46	39	33	42	35	31	38	33	29	34	30	26
8	57	44	36	31	54	42	35	30	38	32	28	35	29	26	31	27	24
9	53	40	33	27	50	39	31	26	35	29	25	32	27	23	29	25	21
10	50	37	30	25	47	36	29	24	32	27	22	30	25	21	27	23	20

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	3673	3673	3673
5°	3672	3613	3640
10°	3635	3555	3585
15°	3574	3487	3502
20°	3494	3397	3417
25°	3415	3290	3320
30°	3317	3190	3198
35°	3224	3074	3070
40°	3111	2957	2947
45°	2998	2838	2821
50°	2873	2714	2676
55°	2743	2570	2541
60°	2595	2401	2386
65°	2432	2224	2205
70°	2225	2009	2007
75°	1943	1751	1816
80°	1598	1422	1470
85°	1070	888	915

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 2998 cd/sqm

TEST NUMBER: P902162

CATALOG NUMBER: DFN2DIP-4P2F0-040D020US830-FLLFL

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	138.1	2.6
10°-20°	388.5	7.2
20°-30°	570.9	10.6
30°-40°	663.1	12.3
40°-50°	662.3	12.3
50°-60°	577.5	10.7
60°-70°	426.9	7.9
70°-80°	241.5	4.5
80°-90°	65.4	1.2
90°-100°	36.9	0.7
100°-110°	117.2	2.2
110°-120°	200.6	3.7
120°-130°	263.8	4.9
130°-140°	296.1	5.5
140°-150°	290.4	5.4
150°-160°	243.6	4.5
160°-170°	161.5	3.0
170°-180°	56.5	1.0
0°-30°	1097.5	20.3
0°-40°	1760.6	32.6
0°-60°	3000.3	55.6
0°-90°	3734.2	69.1
90°-120°	354.7	6.6
90°-150°	1205.0	22.3
90°-180°	1667.0	30.9
0°-180°	5400.8	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	1467	1467	1467	1467	1467	
5°	1467	1461	1446	1457	1454	139
15°	1396	1388	1370	1375	1368	393
25°	1264	1253	1229	1231	1229	582
35°	1090	1076	1054	1045	1038	681
45°	887	878	856	841	835	685
55°	672	663	646	629	622	600
65°	453	444	430	418	411	448
75°	237	234	227	219	222	253
85°	58	56	55	51	49	64
90°	1	6	18	16	17	5
95°	26	31	32	32	31	29
105°	108	110	111	112	112	114
115°	201	204	203	203	201	199
125°	293	297	296	294	294	262
135°	379	384	385	385	383	293
145°	460	463	466	467	465	287
155°	526	527	529	531	530	242
165°	572	571	571	575	572	161
175°	595	594	593	596	593	57
180°	596	596	596	596	596	

TEST NUMBER: P902162

CATALOG NUMBER: DFN2DIP-4P2F0-040D020US830-FLLFL

CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	1467.0	1467.0	1467.0	1467.0	1467.0
2.5°	1475.5	1468.5	1452.9	1467.0	1464.3
5°	1467.0	1461.4	1445.9	1457.1	1454.4
7.5°	1457.1	1448.7	1433.1	1444.5	1441.7
10°	1441.7	1431.8	1414.9	1426.2	1421.9
12.5°	1420.4	1412.0	1395.2	1402.2	1399.3
15°	1396.5	1388.1	1369.7	1375.4	1368.4
17.5°	1366.9	1358.5	1340.1	1347.1	1340.1
20°	1334.4	1326.0	1306.3	1310.4	1304.9
22.5°	1302.0	1289.3	1270.9	1270.9	1268.1
25°	1263.9	1252.6	1228.7	1231.4	1228.7
27.5°	1221.5	1211.6	1193.4	1189.2	1182.2
30°	1179.3	1168.0	1146.9	1142.6	1137.0
32.5°	1134.2	1125.8	1103.2	1094.7	1088.9
35°	1090.4	1076.4	1053.8	1045.3	1038.2
37.5°	1041.0	1028.3	1005.7	995.9	988.8
40°	990.3	978.9	956.3	943.8	938.1
42.5°	940.9	929.5	907.1	892.9	884.5
45°	887.3	877.5	856.2	840.8	835.1
47.5°	835.1	825.2	802.7	787.1	778.7
50°	780.0	773.0	753.3	733.5	726.4
52.5°	726.4	716.6	698.3	682.8	672.9
55°	671.6	663.0	646.1	629.1	622.2
57.5°	616.4	609.4	591.0	574.1	568.4
60°	561.4	555.8	536.1	520.6	516.3
62.5°	507.8	497.9	483.9	469.8	464.1
65°	452.9	444.3	430.3	417.5	410.6
67.5°	396.4	389.3	376.7	366.8	361.2
70°	344.2	338.6	325.8	315.9	310.4
72.5°	290.7	284.9	278.0	268.1	263.8
75°	237.0	234.2	227.1	218.7	221.5
77.5°	189.0	183.3	180.5	176.3	172.1
80°	141.1	139.6	136.8	132.6	129.8
82.5°	96.0	96.0	94.6	88.9	88.9
85°	57.8	56.5	55.0	50.7	49.4
87.5°	25.4	22.6	19.8	15.6	14.0
90°	0.6	6.5	17.6	16.5	17.1
92.5°	11.1	15.1	15.6	16.2	16.2
95°	26.2	31.3	32.1	32.1	31.3
97.5°	43.6	48.4	50.3	50.3	50.3
100°	63.8	68.0	69.4	69.4	68.8
102.5°	85.0	88.0	90.0	90.6	90.0
105°	108.2	109.6	110.7	111.6	111.6
107.5°	131.2	133.4	133.4	133.7	131.2
110°	153.5	156.4	156.4	156.4	155.0

TEST NUMBER: P902162

CATALOG NUMBER: DFN2DIP-4P2F0-040D020US830-FLLFLL

CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	177.6	180.6	180.1	178.6	177.6
115°	201.3	204.2	203.3	202.7	201.3
117.5°	224.9	228.8	226.3	224.9	223.4
120°	248.5	252.5	248.5	248.5	246.9
122.5°	270.1	275.1	272.7	271.3	270.1
125°	292.8	297.3	295.9	294.3	293.7
127.5°	314.9	320.5	318.5	316.3	314.9
130°	335.5	342.0	341.1	340.1	338.1
132.5°	358.7	363.8	364.1	361.7	360.1
135°	378.7	384.3	385.3	384.8	383.3
137.5°	401.0	405.5	406.4	406.0	403.9
140°	420.6	425.1	427.6	427.6	425.7
142.5°	440.7	445.2	446.7	447.1	445.2
145°	459.8	463.4	466.3	466.7	464.8
147.5°	476.8	481.4	483.5	484.4	482.4
150°	494.5	497.5	499.5	501.1	499.5
152.5°	510.1	513.1	515.7	517.6	515.7
155°	525.8	527.2	528.8	531.3	529.7
157.5°	539.2	540.3	541.2	544.8	542.2
160°	551.3	552.3	552.9	555.9	553.7
162.5°	562.4	562.4	562.9	566.4	563.8
165°	571.9	571.4	571.4	575.0	572.5
167.5°	580.5	578.9	578.9	582.5	580.0
170°	587.0	585.6	585.0	588.6	585.6
172.5°	591.5	590.0	589.6	593.1	590.0
175°	595.1	593.7	592.6	596.2	593.1
177.5°	597.1	595.7	594.6	597.6	594.6
180°	596.2	596.2	596.2	596.2	596.2

TEST NUMBER: P902162

CATALOG NUMBER: DFN2DIP-4P2F0-040D020US830-FLLFL

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	13.26	14.32	14.03	15.12	16.09	12.82	13.88	13.59	14.68	15.65
	3H	14.91	15.87	15.70	16.67	17.67	14.42	15.38	15.21	16.19	17.18
	4H	15.49	16.40	16.30	17.21	18.22	15.00	15.90	15.81	16.72	17.73
	6H	15.89	16.72	16.70	17.54	18.57	15.39	16.22	16.20	17.04	18.07
	8H	15.99	16.78	16.82	17.62	18.65	15.49	16.28	16.31	17.12	18.15
	12H	16.04	16.79	16.87	17.63	18.68	15.53	16.28	16.36	17.12	18.17
4H	2H	13.73	14.64	14.54	15.45	16.46	13.38	14.28	14.19	15.09	16.10
	3H	15.59	16.34	16.41	17.19	18.22	15.18	15.94	16.00	16.78	17.81
	4H	16.29	16.98	17.13	17.83	18.88	15.87	16.56	16.70	17.40	18.46
	6H	16.80	17.39	17.65	18.26	19.32	16.37	16.96	17.22	17.83	18.89
	8H	16.94	17.50	17.80	18.36	19.43	16.51	17.06	17.36	17.93	19.00
	12H	17.02	17.52	17.89	18.40	19.48	16.57	17.07	17.44	17.95	19.03
8H	4H	16.49	17.05	17.35	17.92	18.99	16.12	16.67	16.97	17.54	18.61
	6H	17.11	17.57	17.99	18.47	19.54	16.72	17.18	17.60	18.09	19.16
	8H	17.31	17.72	18.21	18.62	19.71	16.92	17.33	17.81	18.23	19.32
	12H	17.44	17.80	18.33	18.69	19.83	17.03	17.39	17.92	18.28	19.42
12H	4H	16.49	16.99	17.36	17.87	18.95	16.12	16.62	16.99	17.50	18.58
	6H	17.13	17.54	18.02	18.44	19.53	16.76	17.17	17.65	18.07	19.16
	8H	17.37	17.73	18.26	18.62	19.76	16.98	17.34	17.88	18.24	19.38