

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: P924119

Luminaire Tested: DFN2DIP-4P4F0-030D080US950-FLLONL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P924119
REPORT IS A COMBINATION OF REPORTS P900659 AND P897523
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-4P4F0-030D080US950-FLLONL
Description: 4 foot, 90deg - 4way Define Geo, with Direct Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

Summary

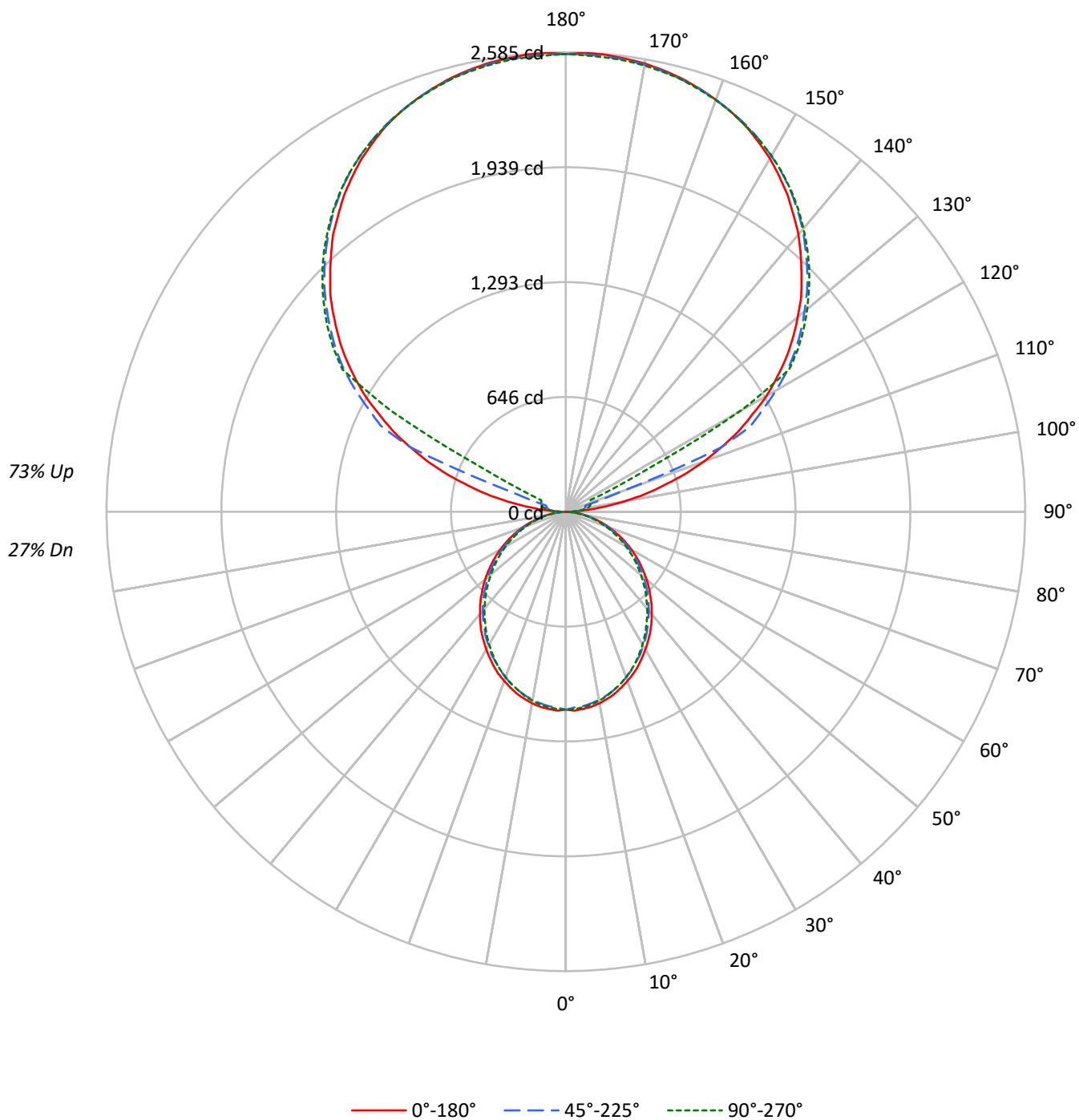
Lumens per Lamp: N/A
Luminaire Lumens: 10389.1 lumens
Efficiency: N/A
Efficacy: 102.7 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 4.07' x L: 4.07' x H: 0.1')
CIE Type: Semi-Indirect

Input Watts (W): 101.2
Input Voltage (V):
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

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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	50	30	10
RCR																				
0	102	102	102	102	91	91	91	91	71	71	71	52	52	52	35	35	35			27
1	93	89	85	81	83	79	76	73	62	60	58	46	45	43	31	30	30			23
2	84	77	71	66	75	69	64	60	54	51	48	40	38	36	27	26	25			19
3	77	68	61	55	68	61	55	50	48	44	40	36	33	31	24	23	21			16
4	70	60	52	47	63	54	47	42	42	38	34	32	29	26	22	20	18			14
5	64	53	45	40	57	48	41	36	38	33	29	28	25	23	19	18	16			12
6	59	48	40	34	53	43	36	31	34	29	25	25	22	20	18	16	14			11
7	55	43	35	30	49	39	32	27	31	26	22	23	20	17	16	14	12			9
8	51	39	31	26	45	35	28	24	28	23	20	21	18	15	15	13	11			8
9	47	35	28	23	42	32	26	21	25	21	17	19	16	14	14	12	10			8
10	44	32	25	21	39	29	23	19	23	19	16	18	15	12	13	11	9			7

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	722	722	722
5°	724	713	717
10°	718	703	708
15°	707	692	693
20°	693	676	678
25°	679	657	660
30°	661	639	638
35°	645	618	614
40°	624	597	591
45°	603	576	568
50°	581	554	541
55°	557	529	516
60°	530	498	488
65°	501	467	455
70°	464	428	419
75°	413	383	386
80°	351	324	323
85°	255	223	218

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 90°

Vertical Angle: 90°

Luminance: 1329 cd/sqm

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	104.8	1.0
10°-20°	294.9	2.8
20°-30°	433.4	4.2
30°-40°	503.4	4.8
40°-50°	502.7	4.8
50°-60°	438.4	4.2
60°-70°	324.1	3.1
70°-80°	183.3	1.8
80°-90°	52.9	0.5
90°-100°	84.9	0.8
100°-110°	316.6	3.0
110°-120°	839.7	8.1
120°-130°	1392.7	13.4
130°-140°	1479.4	14.2
140°-150°	1374.9	13.2
150°-160°	1105.4	10.6
160°-170°	712.3	6.9
170°-180°	245.2	2.4
0°-30°	833.1	8.0
0°-40°	1336.5	12.9
0°-60°	2277.6	21.9
0°-90°	2837.9	27.3
90°-120°	1241.3	11.9
90°-150°	5488.3	52.8
90°-180°	7551.0	72.7
0°-180°	10389.1	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	1114	1114	1114	1114	1114	
5°	1114	1109	1098	1106	1104	106
15°	1060	1054	1040	1044	1039	299
25°	959	951	933	935	933	441
35°	828	817	800	793	788	517
45°	674	666	650	638	634	520
55°	510	503	490	478	472	456
65°	344	337	327	317	312	340
75°	180	178	172	166	168	192
85°	44	43	42	38	38	49
90°	2	22	37	47	50	10
95°	121	60	73	82	80	143
105°	567	623	114	134	142	605
115°	1072	1103	1150	287	153	1055
125°	1515	1540	1575	1588	1594	1351
135°	1875	1905	1922	1940	1936	1448
145°	2175	2173	2205	2218	2208	1360
155°	2395	2378	2401	2412	2397	1104
165°	2524	2512	2518	2531	2518	713
175°	2581	2568	2572	2585	2566	246
180°	2576	2576	2576	2576	2576	

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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	1113.6	1113.6	1113.6	1113.6	1113.6
2.5°	1120.1	1114.7	1102.9	1113.6	1111.6
5°	1113.6	1109.4	1097.6	1106.2	1104.1
7.5°	1106.2	1099.8	1087.9	1096.6	1094.4
10°	1094.4	1086.9	1074.1	1082.6	1079.5
12.5°	1078.3	1071.9	1059.1	1064.4	1062.3
15°	1060.1	1053.8	1039.8	1044.1	1038.7
17.5°	1037.6	1031.3	1017.3	1022.6	1017.3
20°	1013.0	1006.6	991.6	994.7	990.5
22.5°	988.4	978.8	964.8	964.8	962.6
25°	959.4	950.9	932.7	934.8	932.7
27.5°	927.3	919.8	905.9	902.8	897.4
30°	895.2	886.6	870.6	867.4	863.1
32.5°	861.0	854.6	837.4	830.9	826.6
35°	827.8	817.1	799.9	793.4	788.1
37.5°	790.3	780.7	763.5	755.9	750.6
40°	751.8	743.2	726.0	716.5	712.2
42.5°	714.3	705.7	688.6	677.8	671.4
45°	673.6	666.1	650.0	638.2	633.9
47.5°	633.9	626.5	609.3	597.5	591.1
50°	592.1	586.8	571.8	556.8	551.5
52.5°	551.5	544.0	530.1	518.3	510.8
55°	509.8	503.3	490.5	477.7	472.3
57.5°	467.9	462.6	448.7	435.8	431.5
60°	426.2	422.0	407.0	395.1	392.0
62.5°	385.5	378.0	367.3	356.6	352.3
65°	343.8	337.3	326.6	317.0	311.7
67.5°	301.0	295.5	285.9	278.5	274.2
70°	261.3	257.0	247.4	239.8	235.6
72.5°	220.7	216.3	210.9	203.5	200.3
75°	179.8	177.8	172.4	166.0	168.2
77.5°	143.5	139.2	137.0	133.8	130.7
80°	107.1	106.0	103.8	100.6	98.5
82.5°	72.8	72.8	71.8	67.4	67.4
85°	43.9	42.8	41.8	38.5	37.5
87.5°	19.3	17.2	15.0	11.8	10.7
90°	1.8	22.3	37.2	46.7	50.3
92.5°	46.7	39.2	44.7	48.5	50.3
95°	121.1	59.5	72.6	82.1	80.1
97.5°	218.0	65.3	94.9	100.7	102.5
100°	330.0	74.6	106.3	121.1	124.8
102.5°	452.9	449.2	110.0	130.3	136.1
105°	566.6	622.6	113.7	134.1	141.7
107.5°	698.9	745.4	117.5	137.9	145.4
110°	825.8	864.7	326.3	139.9	147.2

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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	945.0	978.4	946.8	143.4	149.2
115°	1071.6	1103.3	1150.0	287.1	152.9
117.5°	1181.6	1218.8	1250.7	984.0	495.8
120°	1304.7	1332.5	1366.2	1388.5	1136.9
122.5°	1408.9	1438.8	1476.2	1487.3	1489.3
125°	1515.1	1539.5	1574.9	1587.9	1593.5
127.5°	1612.1	1638.2	1666.4	1684.9	1686.7
130°	1703.5	1733.3	1753.7	1774.3	1772.5
132.5°	1796.7	1821.0	1841.4	1858.2	1856.4
135°	1875.0	1904.9	1921.5	1940.3	1936.5
137.5°	1956.9	1979.3	1998.1	2016.7	2011.1
140°	2037.0	2052.1	2072.5	2089.3	2079.9
142.5°	2104.3	2117.3	2141.4	2156.3	2147.0
145°	2175.1	2173.1	2204.8	2217.9	2208.5
147.5°	2236.5	2230.9	2262.5	2271.9	2264.5
150°	2296.2	2283.1	2313.0	2324.0	2314.8
152.5°	2346.5	2331.6	2359.4	2370.8	2357.7
155°	2394.9	2378.3	2400.6	2411.7	2396.9
157.5°	2434.0	2419.2	2436.0	2449.1	2434.0
160°	2467.7	2456.5	2467.7	2478.8	2465.7
162.5°	2497.4	2486.3	2495.6	2508.6	2491.8
165°	2523.5	2512.5	2518.0	2531.0	2518.0
167.5°	2544.0	2532.8	2538.5	2551.6	2534.8
170°	2560.9	2549.6	2553.4	2566.5	2549.6
172.5°	2572.0	2560.9	2564.6	2577.7	2560.9
175°	2581.2	2568.2	2572.0	2585.0	2566.5
177.5°	2585.0	2572.0	2573.9	2587.0	2570.2
180°	2575.7	2575.7	2575.7	2575.7	2575.7

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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	3.57	4.26	4.70	5.38	6.94	3.12	3.81	4.25	4.93	6.50
	3H	5.22	5.84	6.36	6.97	8.54	4.73	5.35	5.87	6.48	8.05
	4H	5.80	6.39	6.95	7.52	9.10	5.31	5.89	6.46	7.03	8.61
	6H	6.20	6.74	7.35	7.87	9.46	5.70	6.24	6.85	7.37	8.96
	8H	6.30	6.81	7.46	7.96	9.55	5.80	6.31	6.96	7.46	9.05
	12H	6.34	6.83	7.51	7.97	9.58	5.83	6.32	7.00	7.46	9.07
4H	2H	4.01	4.59	5.16	5.72	7.31	3.65	4.24	4.81	5.37	6.95
	3H	5.86	6.35	7.02	7.51	9.10	5.46	5.95	6.62	7.10	8.70
	4H	6.58	7.03	7.74	8.17	9.78	6.15	6.60	7.31	7.75	9.36
	6H	7.09	7.47	8.25	8.64	10.24	6.65	7.04	7.82	8.21	9.81
	8H	7.23	7.59	8.40	8.75	10.37	6.80	7.16	7.96	8.32	9.94
	12H	7.30	7.63	8.49	8.80	10.42	6.85	7.18	8.04	8.35	9.97
8H	4H	6.76	7.12	7.93	8.28	9.90	6.38	6.74	7.55	7.90	9.52
	6H	7.39	7.69	8.58	8.89	10.51	7.01	7.30	8.19	8.50	10.12
	8H	7.61	7.87	8.80	9.05	10.69	7.22	7.48	8.41	8.66	10.30
	12H	7.74	7.97	8.94	9.14	10.81	7.33	7.55	8.52	8.73	10.40
12H	4H	6.74	7.06	7.92	8.23	9.86	6.37	6.70	7.55	7.87	9.49
	6H	7.42	7.68	8.61	8.86	10.49	7.05	7.31	8.24	8.48	10.12
	8H	7.66	7.88	8.85	9.06	10.73	7.28	7.50	8.47	8.68	10.35