

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: P915787

Luminaire Tested: DFN2DIP-4P2F0-020D040US930-FLONL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P915787
REPORT IS A COMBINATION OF REPORTS P900543 AND P897455
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-4P2F0-020D040US930-FLLONL
Description: 2 foot, 90deg - 4way Define Geo, with Direct Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

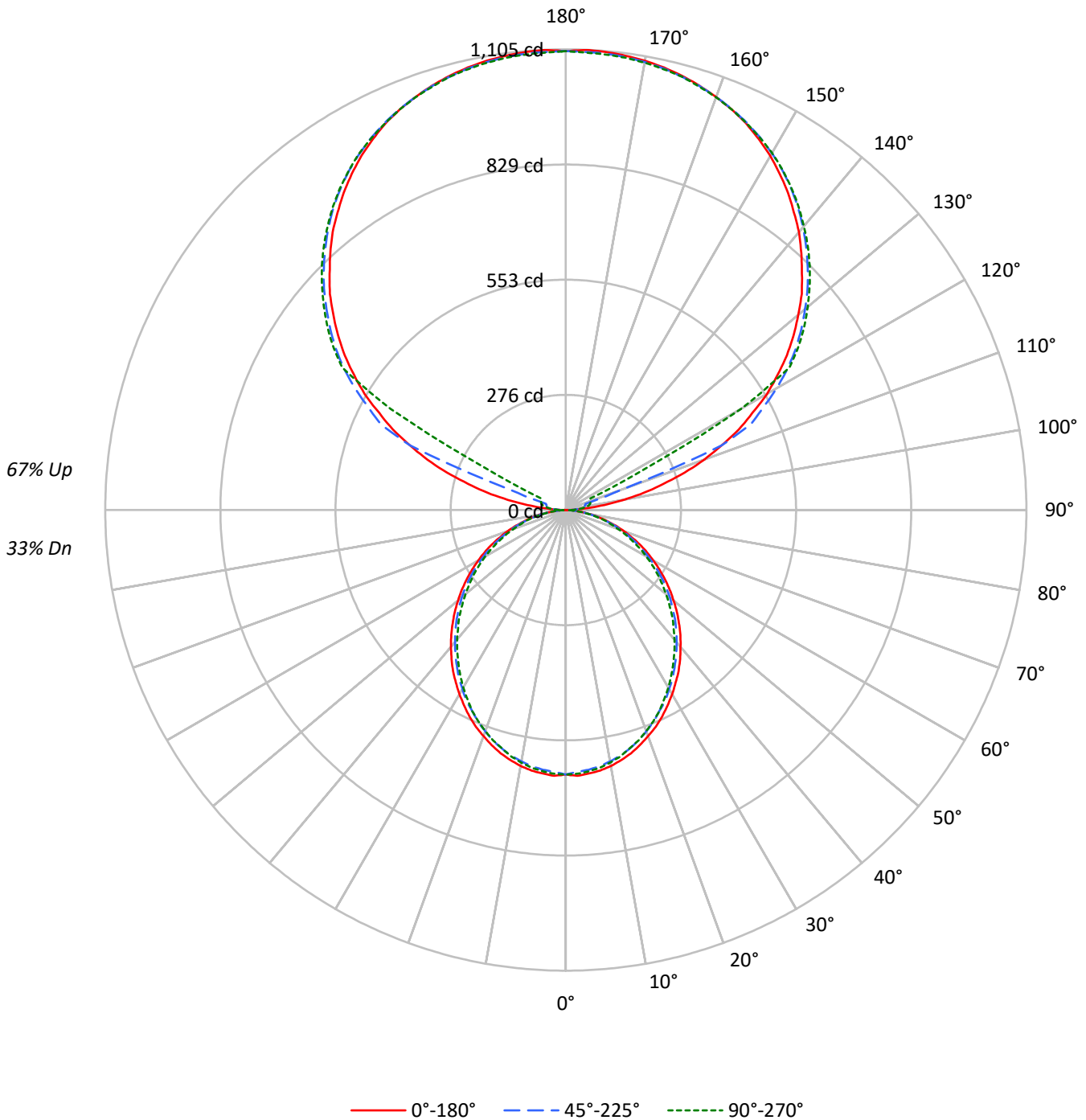
Summary

Lumens per Lamp: N/A
Luminaire Lumens: 4842.9 lumens
Efficiency: N/A
Efficacy: 98.2 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-Indirect

Input Watts (W): 49.3
Input Voltage (V): 120
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.9967
Total Harmonic Distortion (THDi): 0.063
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 24 FT

TEST NUMBER: P915787
CATALOG NUMBER: DFN2DIP-4P2F0-020D040US930-FLLONL

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	103	103	103	103	93	93	93	93	74	74	74	57	57	57	41	41	41	33			33
1	94	90	86	83	85	81	78	75	65	63	61	50	48	47	36	35	34	28			28
2	86	78	72	67	77	71	66	62	57	53	50	44	41	39	32	30	29	24			24
3	78	69	62	56	70	62	56	51	50	46	42	39	36	33	28	26	25	20			20
4	71	61	53	47	64	55	49	43	44	40	36	34	31	28	25	23	21	17			17
5	65	54	46	40	59	49	42	37	40	35	31	31	27	25	23	20	18	15			15
6	60	48	41	35	54	44	37	32	36	31	27	28	24	21	20	18	16	13			13
7	56	44	36	30	50	40	33	28	32	27	23	25	22	19	19	16	14	12			12
8	51	39	32	27	46	36	29	25	29	24	21	23	19	17	17	15	13	10			10
9	48	36	29	24	43	33	26	22	27	22	19	21	18	15	16	13	12	9			9
10	45	33	26	21	40	30	24	20	25	20	17	19	16	14	15	12	11	9			9

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	1589	1589	1589
5°	1588	1562	1574
10°	1572	1538	1551
15°	1546	1508	1515
20°	1511	1469	1478
25°	1477	1423	1436
30°	1435	1380	1383
35°	1395	1330	1328
40°	1346	1279	1275
45°	1297	1228	1220
50°	1243	1174	1157
55°	1186	1111	1099
60°	1122	1039	1032
65°	1051	962	954
70°	963	869	868
75°	840	757	785
80°	692	616	635
85°	461	384	396

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°
 Vertical Angle: 45°
 Luminance: 1297 cd/sqm



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	59.7	1.2
10°-20°	168.0	3.5
20°-30°	246.9	5.1
30°-40°	286.8	5.9
40°-50°	286.4	5.9
50°-60°	249.7	5.2
60°-70°	184.6	3.8
70°-80°	104.5	2.2
80°-90°	29.5	0.6
90°-100°	36.3	0.7
100°-110°	135.3	2.8
110°-120°	358.8	7.4
120°-130°	595.1	12.3
130°-140°	632.1	13.1
140°-150°	587.5	12.1
150°-160°	472.3	9.8
160°-170°	304.4	6.3
170°-180°	104.8	2.2
0°-30°	474.7	9.8
0°-40°	761.5	15.7
0°-60°	1297.6	26.8
0°-90°	1616.2	33.4
90°-120°	530.4	11.0
90°-150°	2345.2	48.4
90°-180°	3227.0	66.6
0°-180°	4842.9	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	634	634	634	634	634	
5°	634	632	625	630	629	60
15°	604	600	592	595	592	170
25°	547	542	531	533	531	252
35°	472	466	456	452	449	295
45°	384	380	370	364	361	296
55°	290	287	279	272	269	260
65°	196	192	186	181	178	194
75°	102	101	98	95	96	109
85°	25	24	24	22	21	28
90°	1	10	16	20	21	4
95°	52	25	31	35	34	61
105°	242	266	49	57	60	259
115°	458	471	491	123	65	451
125°	647	658	673	679	681	577
135°	801	814	821	829	828	619
145°	929	929	942	948	944	581
155°	1023	1016	1026	1030	1024	472
165°	1078	1074	1076	1082	1076	305
175°	1103	1097	1099	1105	1097	105
180°	1101	1101	1101	1101	1101	



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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	634.5	634.5	634.5	634.5	634.5
2.5°	638.1	635.1	628.4	634.5	633.3
5°	634.5	632.1	625.3	630.2	629.0
7.5°	630.2	626.6	619.9	624.8	623.5
10°	623.5	619.3	612.0	616.8	615.0
12.5°	614.3	610.7	603.4	606.4	605.2
15°	604.0	600.4	592.4	594.8	591.8
17.5°	591.2	587.6	579.6	582.6	579.6
20°	577.1	573.5	564.9	566.8	564.3
22.5°	563.1	557.7	549.7	549.7	548.5
25°	546.7	541.8	531.4	532.6	531.4
27.5°	528.3	524.1	516.2	514.4	511.3
30°	510.1	505.2	496.0	494.2	491.7
32.5°	490.5	486.9	477.1	473.4	471.0
35°	471.7	465.5	455.8	452.1	449.0
37.5°	450.3	444.7	435.0	430.7	427.6
40°	428.3	423.4	413.6	408.2	405.7
42.5°	406.9	402.0	392.3	386.2	382.5
45°	383.8	379.5	370.3	363.6	361.2
47.5°	361.2	356.9	347.2	340.4	336.8
50°	337.4	334.4	325.8	317.2	314.2
52.5°	314.2	309.9	302.0	295.3	291.1
55°	290.4	286.7	279.4	272.1	269.0
57.5°	266.6	263.6	255.6	248.3	245.8
60°	242.8	240.4	231.9	225.1	223.3
62.5°	219.6	215.3	209.3	203.2	200.7
65°	195.8	192.2	186.1	180.6	177.6
67.5°	171.5	168.4	162.9	158.7	156.2
70°	148.9	146.4	140.9	136.6	134.3
72.5°	125.7	123.3	120.2	115.9	114.1
75°	102.5	101.3	98.2	94.6	95.8
77.5°	81.8	79.3	78.0	76.2	74.4
80°	61.1	60.4	59.2	57.3	56.1
82.5°	41.5	41.5	40.9	38.5	38.5
85°	24.9	24.4	23.8	21.9	21.4
87.5°	11.0	9.8	8.6	6.8	6.1
90°	0.7	9.5	15.9	20.0	21.4
92.5°	20.0	16.7	19.1	20.7	21.4
95°	51.7	25.4	31.0	35.1	34.2
97.5°	93.2	27.9	40.6	43.0	43.8
100°	141.0	31.9	45.4	51.7	53.3
102.5°	193.5	192.0	47.0	55.7	58.1
105°	242.1	266.0	48.6	57.3	60.5
107.5°	298.6	318.5	50.2	58.9	62.1
110°	352.9	369.5	139.4	59.8	62.9



TEST NUMBER: P915787

CATALOG NUMBER: DFN2DIP-4P2F0-020D040US930-FLLONL

CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	403.8	418.1	404.6	61.3	63.8
115°	457.9	471.4	491.4	122.6	65.4
117.5°	504.9	520.8	534.4	420.4	211.8
120°	557.5	569.4	583.8	593.4	485.8
122.5°	602.0	614.8	630.8	635.5	636.3
125°	647.4	657.9	672.9	678.6	680.9
127.5°	688.8	700.0	712.0	720.0	720.7
130°	727.9	740.7	749.3	758.1	757.4
132.5°	767.7	778.1	786.8	794.0	793.3
135°	801.2	814.0	821.1	829.1	827.5
137.5°	836.2	845.7	853.8	861.7	859.3
140°	870.4	876.9	885.6	892.8	888.8
142.5°	899.2	904.7	915.1	921.4	917.5
145°	929.4	928.6	942.1	947.7	943.7
147.5°	955.6	953.2	966.8	970.8	967.7
150°	981.1	975.6	988.4	993.1	989.1
152.5°	1002.7	996.3	1008.2	1013.0	1007.5
155°	1023.4	1016.3	1025.8	1030.5	1024.2
157.5°	1040.1	1033.7	1041.0	1046.5	1040.1
160°	1054.4	1049.6	1054.4	1059.2	1053.6
162.5°	1067.1	1062.4	1066.4	1072.0	1064.8
165°	1078.3	1073.6	1075.9	1081.5	1075.9
167.5°	1087.1	1082.2	1084.8	1090.3	1083.1
170°	1094.3	1089.5	1091.0	1096.7	1089.5
172.5°	1099.0	1094.3	1095.9	1101.5	1094.3
175°	1102.9	1097.4	1099.0	1104.6	1096.7
177.5°	1104.6	1099.0	1099.8	1105.5	1098.3
180°	1100.7	1100.7	1100.7	1100.7	1100.7



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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	6.97	7.70	8.06	8.79	10.28	6.53	7.26	7.62	8.34	9.84
	3H	8.60	9.25	9.70	10.35	11.86	8.11	8.76	9.21	9.86	11.37
	4H	9.17	9.79	10.27	10.88	12.40	8.67	9.29	9.78	10.39	11.90
	6H	9.54	10.11	10.66	11.21	12.74	9.04	9.61	10.16	10.71	12.24
	8H	9.64	10.18	10.76	11.29	12.81	9.13	9.68	10.25	10.79	12.31
	12H	9.67	10.19	10.80	11.30	12.84	9.16	9.68	10.29	10.79	12.33
4H	2H	7.41	8.03	8.52	9.12	10.64	7.05	7.67	8.16	8.77	10.28
	3H	9.23	9.75	10.35	10.87	12.40	8.82	9.34	9.94	10.46	11.99
	4H	9.92	10.40	11.05	11.51	13.06	9.50	9.97	10.62	11.09	12.63
	6H	10.41	10.82	11.54	11.95	13.49	9.98	10.38	11.11	11.52	13.06
	8H	10.55	10.93	11.68	12.05	13.61	10.11	10.49	11.24	11.61	13.17
	12H	10.60	10.95	11.75	12.09	13.65	10.15	10.50	11.30	11.64	13.20
8H	4H	10.10	10.48	11.23	11.60	13.16	9.72	10.10	10.85	11.23	12.78
	6H	10.69	11.01	11.85	12.18	13.73	10.31	10.62	11.46	11.79	13.34
	8H	10.90	11.17	12.06	12.32	13.89	10.50	10.78	11.66	11.93	13.50
	12H	11.01	11.25	12.17	12.40	14.00	10.60	10.84	11.76	11.98	13.59
12H	4H	10.07	10.42	11.22	11.56	13.12	9.70	10.05	10.85	11.19	12.75
	6H	10.72	10.99	11.88	12.14	13.71	10.34	10.62	11.50	11.77	13.34
	8H	10.94	11.18	12.10	12.32	13.93	10.55	10.79	11.71	11.94	13.55