

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: P923103

Luminaire Tested: DFN2DIP-SQ4F0-070D160US940-RLLONL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P923103
REPORT IS A COMBINATION OF REPORTS P901726 AND P898471
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-SQ4F0-070D160US940-RLLONL
Description: 4 foot, Square Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

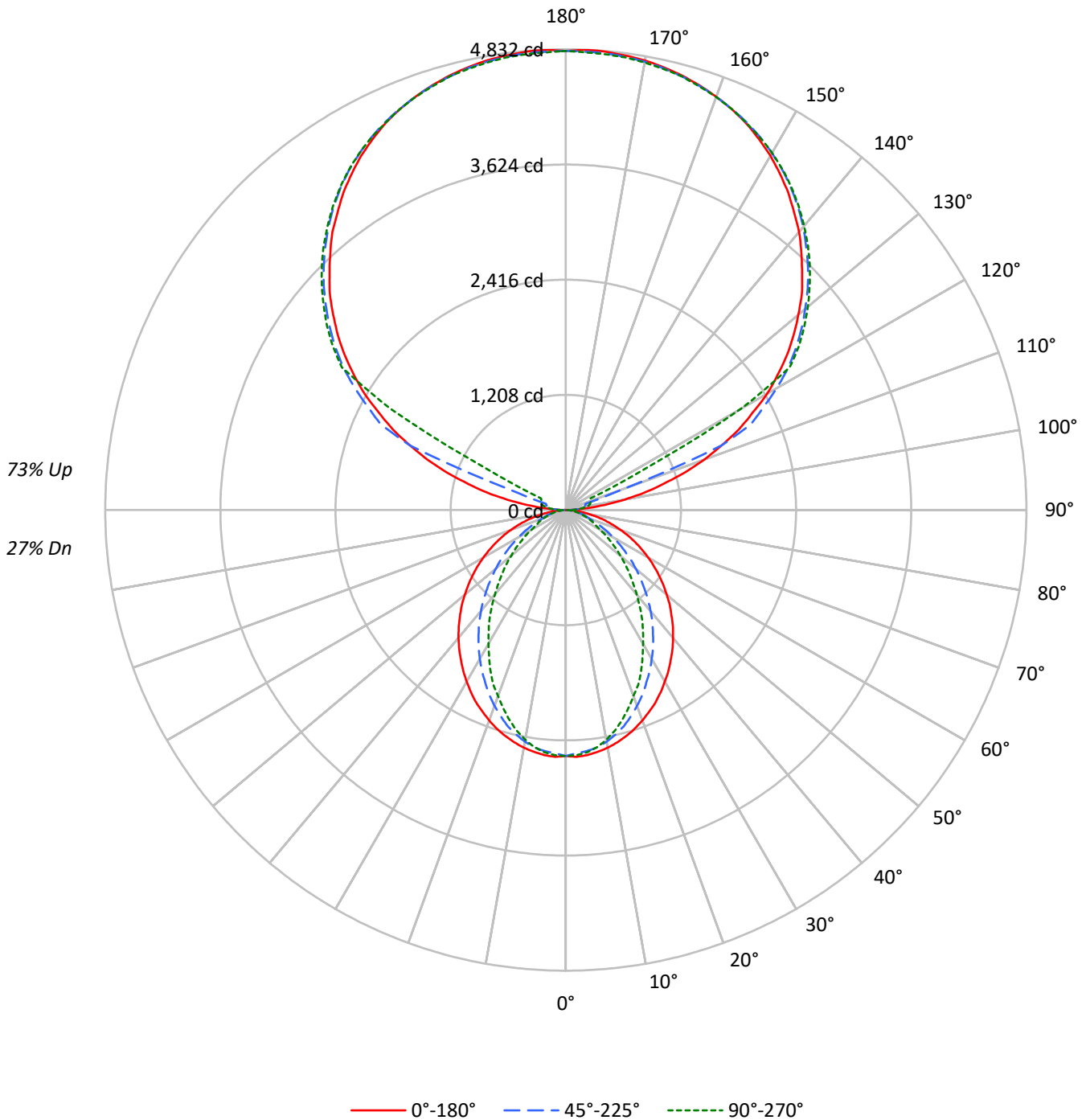
Summary

Lumens per Lamp: N/A
Luminaire Lumens: 19430.3 lumens
Efficiency: N/A
Efficacy: 105.9 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16
Luminous Opening: Rectangular w/ Sides (W: 3.92' x L: 3.92' x H: 0.1')
CIE Type: Semi-Indirect

Input Watts (W): 183.4
Input Voltage (V):
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

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Luminous Intensity Polar Plot





TEST NUMBER: P923103
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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	102	102	102	102	91	91	91	91	71	71	71	52	52	52	35	35	35	27				27
1	93	89	85	82	83	80	77	74	62	60	58	46	45	44	32	31	30	24				24
2	85	78	72	67	76	70	65	61	55	52	49	41	39	37	28	27	26	20				20
3	77	69	62	56	69	62	56	51	49	44	41	36	34	32	25	24	22	17				17
4	71	61	53	48	63	55	48	43	43	39	35	33	30	27	23	21	19	15				15
5	65	54	46	41	58	49	42	37	39	34	30	29	26	24	20	19	17	13				13
6	60	49	41	35	53	44	37	32	35	30	27	26	23	21	19	17	15	12				12
7	55	44	36	31	49	40	33	28	32	27	23	24	21	18	17	15	13	11				11
8	51	40	32	27	46	36	29	25	29	24	21	22	19	16	16	14	12	10				10
9	48	36	29	24	43	33	27	22	26	22	18	20	17	15	14	12	11	9				9
10	44	33	26	22	40	30	24	20	24	20	17	19	15	13	13	11	10	8				8

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	1810	1810	1810
5°	1813	1782	1793
10°	1795	1747	1736
15°	1770	1690	1646
20°	1738	1611	1536
25°	1704	1522	1429
30°	1659	1430	1294
35°	1615	1332	1175
40°	1570	1231	1038
45°	1518	1118	915
50°	1464	1004	794
55°	1408	883	678
60°	1343	755	559
65°	1268	626	503
70°	1177	505	456
75°	1063	446	416
80°	898	376	363
85°	625	252	276

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 90°
 Vertical Angle: 90°
 Luminance: 2581 cd/sqm



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	241.8	1.2
10°-20°	663.7	3.4
20°-30°	931.9	4.8
30°-40°	1015.8	5.2
40°-50°	933.6	4.8
50°-60°	733.2	3.8
60°-70°	477.3	2.5
70°-80°	245.7	1.3
80°-90°	71.2	0.4
90°-100°	158.8	0.8
100°-110°	591.9	3.0
110°-120°	1569.8	8.1
120°-130°	2603.6	13.4
130°-140°	2765.6	14.2
140°-150°	2570.3	13.2
150°-160°	2066.5	10.6
160°-170°	1331.6	6.9
170°-180°	458.3	2.4
0°-30°	1837.4	9.5
0°-40°	2853.2	14.7
0°-60°	4520.0	23.3
0°-90°	5314.1	27.3
90°-120°	2320.4	11.9
90°-150°	10259.9	52.8
90°-180°	14116.0	72.6
0°-180°	19430.3	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	2580	2580	2580	2580	2580	
5°	2580	2568	2538	2559	2552	245
15°	2454	2428	2349	2304	2281	691
25°	2227	2152	1998	1903	1868	1024
35°	1919	1800	1595	1448	1396	1201
45°	1569	1412	1167	1002	946	1212
55°	1193	1011	759	619	574	1066
65°	806	616	406	327	320	799
75°	430	266	187	170	168	454
85°	100	51	44	44	44	115
90°	3	42	70	87	94	18
95°	226	111	136	154	150	268
105°	1059	1164	213	251	265	1132
115°	2003	2062	2150	537	286	1972
125°	2832	2878	2944	2969	2979	2526
135°	3505	3561	3592	3627	3620	2708
145°	4066	4062	4122	4146	4129	2543
155°	4477	4446	4488	4508	4481	2063
165°	4717	4697	4707	4732	4707	1333
175°	4825	4801	4808	4832	4798	459
180°	4815	4815	4815	4815	4815	



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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	2579.8	2579.8	2579.8	2579.8	2579.8
2.5°	2591.4	2579.8	2554.0	2577.6	2572.9
5°	2579.8	2568.1	2537.7	2558.8	2551.8
7.5°	2558.8	2544.9	2512.2	2521.3	2509.7
10°	2530.8	2514.4	2467.8	2460.7	2446.8
12.5°	2495.8	2474.8	2411.6	2397.7	2371.9
15°	2453.7	2427.9	2348.7	2304.4	2281.1
17.5°	2404.7	2367.3	2269.2	2217.9	2180.5
20°	2348.7	2301.9	2185.2	2127.0	2075.5
22.5°	2288.0	2234.3	2098.7	2019.5	1984.6
25°	2227.3	2152.5	1998.4	1902.8	1867.7
27.5°	2155.0	2075.5	1905.1	1795.4	1741.6
30°	2078.0	1989.0	1802.2	1683.4	1620.2
32.5°	2003.1	1895.7	1704.4	1564.2	1505.7
35°	1919.1	1800.0	1594.7	1447.6	1396.1
37.5°	1837.5	1708.9	1491.9	1330.6	1272.5
40°	1751.0	1611.1	1384.4	1218.7	1158.0
42.5°	1662.3	1513.0	1277.1	1104.2	1046.1
45°	1569.0	1412.4	1167.4	1001.5	945.5
47.5°	1480.2	1314.6	1062.4	896.4	845.2
50°	1382.2	1216.5	959.6	798.3	749.6
52.5°	1286.3	1111.2	861.5	707.4	663.1
55°	1192.9	1010.8	758.7	618.8	574.4
57.5°	1097.3	910.5	667.8	537.0	499.6
60°	999.3	812.4	571.9	453.1	415.6
62.5°	903.6	716.8	490.2	378.3	359.6
65°	805.5	616.3	406.3	327.0	319.8
67.5°	712.1	522.9	327.0	287.0	280.2
70°	614.0	431.9	270.7	247.4	238.0
72.5°	520.7	347.8	226.4	207.9	203.1
75°	429.5	266.0	186.7	170.4	168.2
77.5°	338.6	189.0	147.1	137.7	133.0
80°	254.4	135.5	112.0	102.8	102.8
82.5°	177.4	91.1	77.0	72.3	72.3
85°	100.3	51.3	44.3	44.3	44.3
87.5°	37.4	18.5	18.5	16.3	16.3
90°	3.3	41.8	69.5	87.3	93.9
92.5°	87.3	73.2	83.6	90.6	93.9
95°	226.3	111.3	135.7	153.5	149.8
97.5°	407.5	122.1	177.5	188.2	191.5
100°	616.9	139.5	198.6	226.3	233.4
102.5°	846.5	839.9	205.6	243.7	254.4
105°	1059.2	1163.9	212.7	250.7	264.7
107.5°	1306.5	1393.5	219.7	257.8	271.8
110°	1543.6	1616.5	609.8	261.4	275.1



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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	1766.7	1829.2	1770.0	268.1	278.8
115°	2003.3	2062.4	2149.7	536.6	285.9
117.5°	2208.9	2278.4	2338.1	1839.5	926.8
120°	2439.0	2491.1	2553.9	2595.8	2125.4
122.5°	2633.8	2689.7	2759.6	2780.3	2784.0
125°	2832.4	2877.9	2944.2	2968.6	2978.9
127.5°	3013.6	3062.5	3115.0	3149.8	3153.1
130°	3184.6	3240.4	3278.5	3316.9	3313.6
132.5°	3358.7	3404.2	3442.3	3473.7	3470.4
135°	3505.1	3561.0	3592.1	3627.2	3620.2
137.5°	3658.2	3700.1	3735.2	3770.0	3759.6
140°	3808.0	3836.1	3874.2	3905.7	3888.3
142.5°	3933.8	3958.2	4003.3	4031.1	4013.7
145°	4066.2	4062.5	4121.7	4146.0	4128.7
147.5°	4180.8	4170.4	4229.6	4247.0	4233.3
150°	4292.5	4268.1	4324.0	4344.7	4327.3
152.5°	4386.4	4358.7	4410.8	4432.0	4407.5
155°	4477.0	4446.0	4487.8	4508.5	4480.8
157.5°	4550.3	4522.6	4554.0	4578.4	4550.3
160°	4613.2	4592.0	4613.2	4633.9	4609.4
162.5°	4668.6	4648.0	4665.3	4689.7	4658.3
165°	4717.4	4696.7	4707.1	4731.5	4707.1
167.5°	4755.9	4734.8	4745.6	4769.9	4738.5
170°	4787.3	4766.3	4773.2	4797.7	4766.3
172.5°	4808.0	4787.3	4794.4	4818.8	4787.3
175°	4825.4	4801.0	4808.0	4832.4	4797.7
177.5°	4832.4	4808.0	4811.8	4836.2	4804.7
180°	4815.1	4815.1	4815.1	4815.1	4815.1



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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	6.61	7.29	7.75	8.41	9.97	2.57	3.25	3.71	4.37	5.93
	3H	8.28	8.88	9.42	10.01	11.59	3.75	4.35	4.89	5.48	7.06
	4H	8.89	9.46	10.04	10.59	12.17	4.19	4.76	5.34	5.90	7.48
	6H	9.30	9.83	10.46	10.96	12.56	4.51	5.03	5.67	6.17	7.76
	8H	9.43	9.93	10.59	11.08	12.66	4.59	5.09	5.75	6.24	7.83
	12H	9.49	9.96	10.65	11.10	12.71	4.63	5.11	5.80	6.25	7.86
4H	2H	6.61	7.18	7.77	8.31	9.90	3.15	3.72	4.31	4.85	6.44
	3H	8.43	8.91	9.59	10.06	11.66	4.49	4.96	5.65	6.12	7.72
	4H	9.12	9.56	10.28	10.70	12.32	5.03	5.47	6.20	6.61	8.23
	6H	9.63	10.00	10.80	11.17	12.78	5.44	5.82	6.61	6.98	8.59
	8H	9.80	10.15	10.97	11.31	12.94	5.57	5.92	6.74	7.08	8.70
	12H	9.90	10.21	11.08	11.38	13.01	5.63	5.94	6.81	7.11	8.74
8H	4H	9.08	9.42	10.25	10.58	12.21	5.30	5.65	6.47	6.81	8.43
	6H	9.64	9.93	10.83	11.13	12.75	5.81	6.10	7.00	7.31	8.92
	8H	9.86	10.11	11.05	11.29	12.93	6.01	6.26	7.20	7.44	9.08
	12H	9.99	10.21	11.19	11.39	13.06	6.12	6.34	7.32	7.52	9.19
12H	4H	9.02	9.34	10.21	10.51	12.13	5.30	5.62	6.49	6.79	8.41
	6H	9.62	9.87	10.81	11.05	12.69	5.86	6.12	7.06	7.30	8.94
	8H	9.83	10.05	11.03	11.23	12.90	6.07	6.29	7.27	7.47	9.14