

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: P904229

Luminaire Tested: DFN2DIP-SQ4F0-160D070US830-FLLONL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P904229
REPORT IS A COMBINATION OF REPORTS P901613 AND P898471
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-SQ4F0-160D070US830-FLLONL
Description: 4 foot, Square Define Geo, with Direct Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

Summary

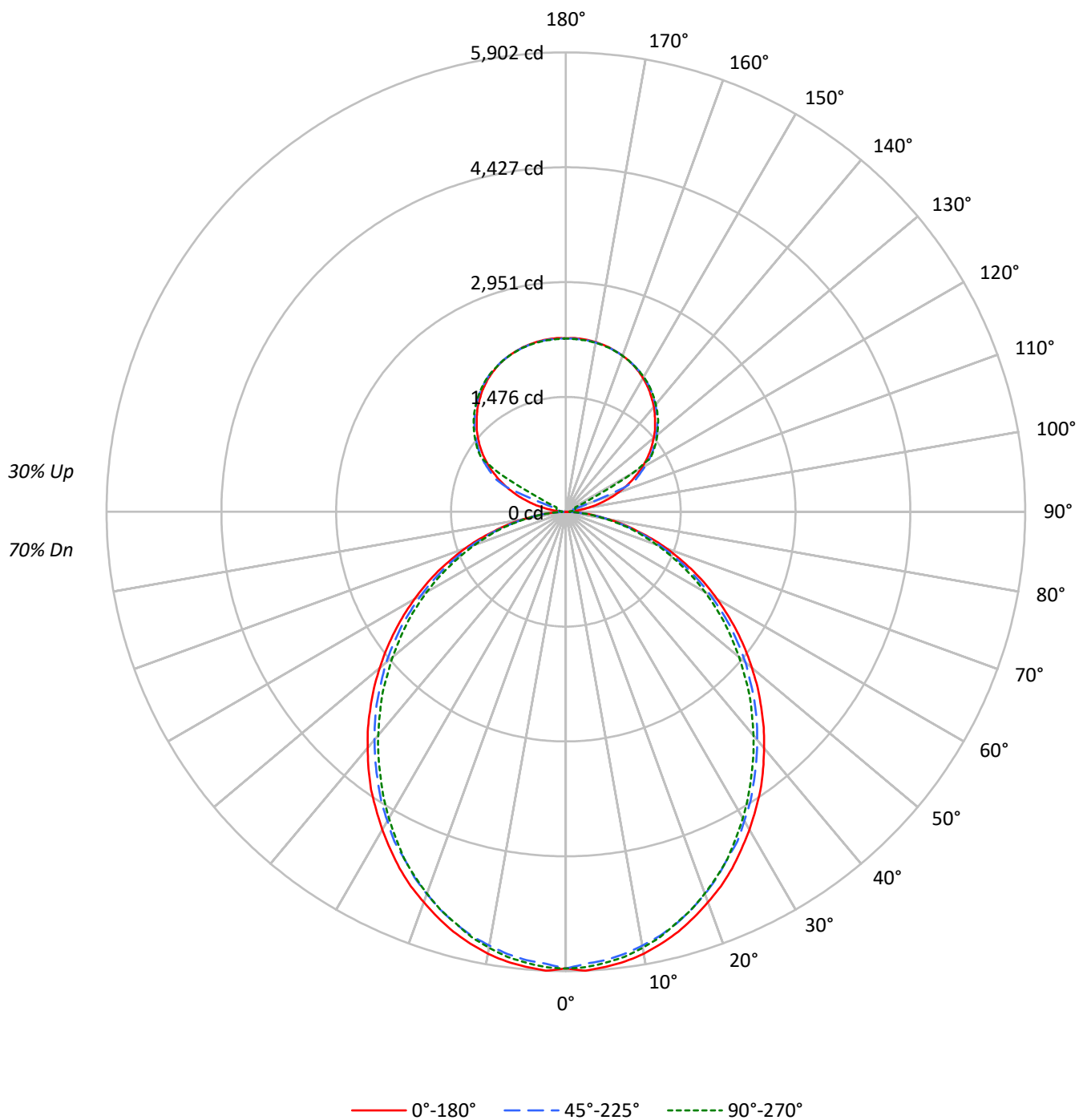
Lumens per Lamp: N/A
Luminaire Lumens: 21461.6 lumens
Efficiency: N/A
Efficacy: 98.0 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.92' x L: 3.92' x H: 0.1')
CIE Type: Semi-Direct

Input Watts (W): 218.9
Input Voltage (V):
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.9971
Total Harmonic Distortion (THDi): 0.049
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
RCR																	
0	112	112	112	112	106	106	106	106	94	94	94	84	84	84	74	74	74
1	102	98	94	90	96	93	89	86	83	80	78	74	72	70	66	64	63
2	93	85	79	74	88	81	75	70	73	68	64	65	61	58	58	55	53
3	85	75	68	61	80	71	64	59	64	59	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	72	59	51	45	67	57	49	43	51	45	40	46	41	37	41	37	34
6	66	53	45	39	62	51	43	38	46	40	35	42	36	32	37	33	30
7	61	48	40	34	58	46	39	33	42	36	31	38	33	29	34	30	27
8	57	44	36	31	54	42	35	30	38	32	28	35	30	26	31	27	24
9	53	40	33	27	50	39	31	27	35	29	25	32	27	23	29	25	22
10	50	37	30	25	47	36	29	24	33	27	23	30	25	21	27	23	20

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	4117	4117	4117
5°	4124	4061	4089
10°	4090	4007	4034
15°	4030	3942	3949
20°	3949	3851	3862
25°	3868	3742	3760
30°	3767	3641	3631
35°	3671	3521	3495
40°	3552	3401	3365
45°	3434	3280	3232
50°	3305	3153	3078
55°	3171	3007	2937
60°	3018	2832	2776
65°	2852	2652	2585
70°	2640	2432	2380
75°	2346	2170	2193
80°	1993	1835	1832
85°	1440	1255	1231

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 3434 cd/sqm

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	552.3	2.6
10°-20°	1553.9	7.2
20°-30°	2283.7	10.6
30°-40°	2652.4	12.4
40°-50°	2649.1	12.3
50°-60°	2309.9	10.8
60°-70°	1707.5	8.0
70°-80°	966.1	4.5
80°-90°	258.9	1.2
90°-100°	73.4	0.3
100°-110°	273.7	1.3
110°-120°	725.9	3.4
120°-130°	1204.0	5.6
130°-140°	1278.9	6.0
140°-150°	1188.6	5.5
150°-160°	955.6	4.5
160°-170°	615.8	2.9
170°-180°	211.9	1.0
0°-30°	4389.9	20.5
0°-40°	7042.3	32.8
0°-60°	12001.3	55.9
0°-90°	14933.8	69.6
90°-120°	1073.0	5.0
90°-150°	4744.6	22.1
90°-180°	6528.0	30.4
0°-180°	21461.6	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	5868	5868	5868	5868	5868	
5°	5868	5846	5784	5828	5818	557
15°	5586	5552	5479	5502	5473	1573
25°	5056	5011	4915	4926	4915	2326
35°	4362	4306	4215	4181	4153	2724
45°	3549	3510	3425	3363	3340	2739
55°	2686	2652	2584	2517	2489	2402
65°	1812	1777	1721	1670	1642	1791
75°	948	937	908	875	886	1012
85°	231	226	220	203	198	258
90°	2	19	32	40	44	20
95°	105	52	63	71	69	124
105°	490	538	98	116	122	523
115°	926	954	994	248	132	912
125°	1310	1331	1362	1373	1378	1168
135°	1621	1647	1661	1677	1674	1252
145°	1880	1879	1906	1917	1909	1176
155°	2070	2056	2075	2085	2072	954
165°	2182	2172	2177	2188	2177	616
175°	2232	2220	2224	2235	2219	212
180°	2227	2227	2227	2227	2227	

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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	5868.0	5868.0	5868.0	5868.0	5868.0
2.5°	5902.1	5873.9	5811.7	5868.0	5857.1
5°	5868.0	5845.8	5783.5	5828.5	5817.7
7.5°	5828.5	5794.9	5732.6	5778.2	5766.8
10°	5766.8	5727.3	5659.7	5704.5	5687.8
12.5°	5681.8	5648.3	5580.6	5608.8	5597.4
15°	5586.0	5552.5	5478.8	5501.6	5473.4
17.5°	5467.5	5433.9	5360.3	5388.4	5360.3
20°	5337.5	5304.1	5225.0	5241.8	5219.6
22.5°	5208.3	5157.4	5083.7	5083.7	5072.4
25°	5055.6	5010.7	4914.9	4925.7	4914.9
27.5°	4886.1	4846.6	4773.6	4756.9	4728.7
30°	4717.3	4671.9	4587.4	4570.7	4548.0
32.5°	4536.6	4503.1	4412.6	4378.5	4355.8
35°	4361.8	4305.5	4215.0	4180.9	4152.8
37.5°	4164.2	4113.3	4023.0	3983.4	3955.3
40°	3961.2	3915.8	3825.4	3775.1	3752.4
42.5°	3763.8	3718.2	3628.4	3571.6	3538.0
45°	3549.4	3509.8	3424.9	3363.2	3340.5
47.5°	3340.5	3301.0	3210.6	3148.3	3114.8
50°	3120.2	3092.0	3013.0	2933.9	2905.9
52.5°	2905.9	2866.4	2793.3	2731.0	2691.5
55°	2686.2	2652.0	2584.4	2516.7	2488.6
57.5°	2465.9	2437.7	2364.1	2296.4	2273.7
60°	2245.5	2223.4	2144.4	2082.1	2065.3
62.5°	2031.2	1991.7	1935.4	1879.1	1856.4
65°	1811.5	1777.4	1721.1	1670.3	1642.1
67.5°	1585.8	1557.1	1506.8	1467.3	1444.5
70°	1376.9	1354.2	1303.3	1263.8	1241.6
72.5°	1162.5	1139.8	1111.7	1072.1	1055.5
75°	947.6	936.9	908.1	874.6	886.0
77.5°	756.1	733.4	722.0	705.2	688.4
80°	564.5	558.6	547.1	530.4	519.1
82.5°	383.7	383.7	378.3	355.6	355.6
85°	231.1	225.6	220.3	202.9	197.6
87.5°	101.8	90.4	79.0	62.3	56.3
90°	1.5	19.3	32.1	40.3	43.5
92.5°	40.3	33.8	38.6	41.9	43.5
95°	104.6	51.5	62.8	71.0	69.3
97.5°	188.4	56.5	82.1	87.1	88.6
100°	285.3	64.5	91.8	104.6	107.9
102.5°	391.4	388.4	95.1	112.7	117.6
105°	489.8	538.2	98.3	115.9	122.4
107.5°	604.2	644.4	101.6	119.2	125.7
110°	713.9	747.5	282.0	120.9	127.2

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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	817.0	845.8	818.5	123.9	128.9
115°	926.4	953.8	994.1	248.2	132.2
117.5°	1021.5	1053.7	1081.2	850.6	428.6
120°	1127.8	1152.0	1181.1	1200.4	982.9
122.5°	1218.0	1243.8	1276.2	1285.7	1287.4
125°	1309.9	1330.9	1361.5	1372.8	1377.5
127.5°	1393.6	1416.2	1440.5	1456.6	1458.1
130°	1472.6	1498.5	1516.1	1533.9	1532.4
132.5°	1553.2	1574.2	1591.9	1606.4	1604.9
135°	1620.9	1646.7	1661.1	1677.3	1674.1
137.5°	1691.7	1711.1	1727.3	1743.4	1738.6
140°	1761.0	1774.0	1791.6	1806.1	1798.1
142.5°	1819.1	1830.4	1851.2	1864.1	1856.1
145°	1880.4	1878.7	1906.0	1917.3	1909.3
147.5°	1933.3	1928.6	1956.0	1964.0	1957.7
150°	1985.0	1973.8	1999.6	2009.1	2001.1
152.5°	2028.4	2015.6	2039.8	2049.5	2038.2
155°	2070.4	2056.0	2075.3	2084.9	2072.1
157.5°	2104.2	2091.4	2105.9	2117.2	2104.2
160°	2133.4	2123.5	2133.4	2142.9	2131.6
162.5°	2159.0	2149.4	2157.4	2168.7	2154.2
165°	2181.5	2172.0	2176.7	2188.0	2176.7
167.5°	2199.3	2189.5	2194.5	2205.8	2191.3
170°	2213.8	2204.1	2207.3	2218.7	2204.1
172.5°	2223.5	2213.8	2217.1	2228.4	2213.8
175°	2231.5	2220.2	2223.5	2234.7	2218.7
177.5°	2234.7	2223.5	2225.2	2236.5	2221.9
180°	2226.7	2226.7	2226.7	2226.7	2226.7

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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	13.84	14.91	14.61	15.70	16.66	13.39	14.46	14.16	15.26	16.22
	3H	15.52	16.48	16.30	17.28	18.27	15.03	15.99	15.81	16.79	17.78
	4H	16.12	17.03	16.92	17.84	18.84	15.62	16.53	16.42	17.34	18.34
	6H	16.53	17.37	17.35	18.19	19.20	16.03	16.87	16.84	17.69	18.70
	8H	16.65	17.44	17.47	18.28	19.30	16.14	16.94	16.96	17.78	18.79
	12H	16.70	17.46	17.53	18.29	19.34	16.19	16.95	17.02	17.78	18.83
4H	2H	14.33	15.23	15.13	16.04	17.04	13.97	14.88	14.77	15.69	16.69
	3H	16.21	16.97	17.03	17.82	18.83	15.81	16.56	16.62	17.41	18.43
	4H	16.94	17.63	17.77	18.47	19.52	16.52	17.21	17.35	18.05	19.09
	6H	17.47	18.07	18.32	18.93	19.99	17.04	17.64	17.89	18.50	19.55
	8H	17.63	18.19	18.48	19.05	20.11	17.19	17.75	18.04	18.61	19.67
	12H	17.71	18.22	18.58	19.10	20.17	17.26	17.77	18.13	18.65	19.72
8H	4H	17.15	17.71	18.00	18.57	19.64	16.78	17.34	17.63	18.20	19.26
	6H	17.80	18.26	18.68	19.16	20.23	17.42	17.88	18.29	18.78	19.85
	8H	18.02	18.44	18.91	19.33	20.41	17.63	18.04	18.52	18.94	20.02
	12H	18.17	18.53	19.06	19.42	20.55	17.76	18.12	18.65	19.01	20.14
12H	4H	17.15	17.65	18.02	18.53	19.60	16.78	17.28	17.65	18.17	19.24
	6H	17.83	18.24	18.72	19.14	20.22	17.46	17.87	18.35	18.77	19.85
	8H	18.09	18.45	18.98	19.34	20.47	17.71	18.07	18.60	18.96	20.09