

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: P923334

Luminaire Tested: DFN2DIP-SQ4F0-160D090US940-RLLFLL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P923334
REPORT IS A COMBINATION OF REPORTS P900130 AND P896915
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-SQ4F0-160D090US940-RLLFLL
Description: 4 foot, Square Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Frosted Lens
Light Source: -
Ballast/Driver: -

Summary

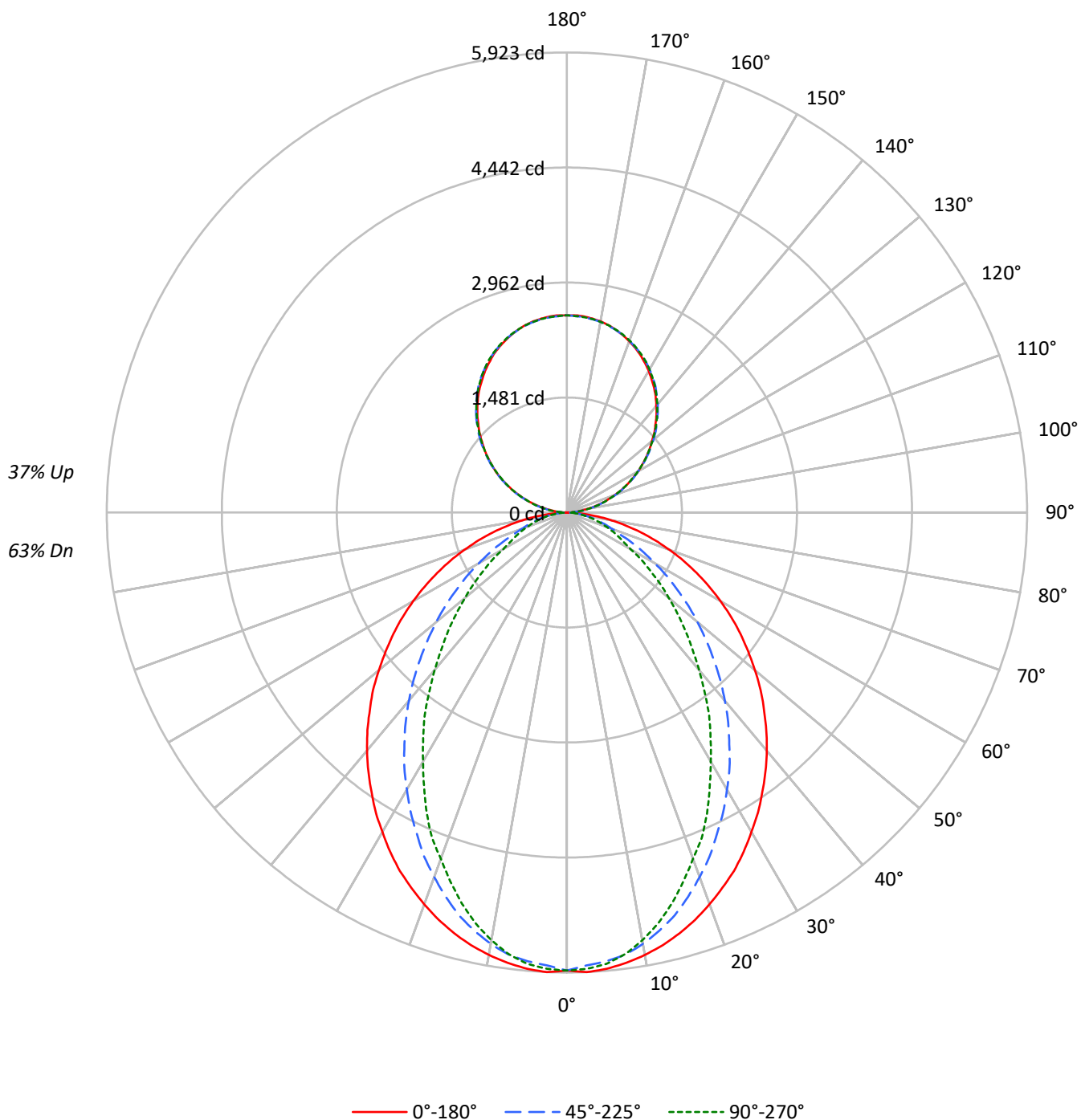
Lumens per Lamp: N/A
Luminaire Lumens: 19229.7 lumens
Efficiency: N/A
Efficacy: 82.4 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16
Luminous Opening: Rectangular w/ Sides (W: 3.92' x L: 3.92' x H: 0.1')
CIE Type: Semi-Direct

Input Watts (W): 233.4
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	110	110	110	110	103	103	103	103	91	91	91	79	79	79	68	68	68
1	101	97	93	90	95	91	88	85	80	78	76	70	69	67	61	60	59
2	93	86	80	75	87	81	75	71	71	67	64	63	60	57	55	52	50
3	85	76	69	63	80	71	65	60	63	58	54	56	52	49	49	46	44
4	78	68	60	54	73	64	57	52	57	51	47	50	46	42	44	41	38
5	72	61	53	47	67	57	50	45	51	45	41	45	41	37	40	37	34
6	67	55	47	41	62	52	45	39	46	41	36	41	37	33	37	33	30
7	62	50	42	36	58	47	40	35	42	36	32	38	33	29	34	30	27
8	58	45	38	32	54	43	36	31	39	33	29	35	30	27	31	27	24
9	54	42	34	29	51	40	33	28	36	30	26	32	27	24	29	25	22
10	50	38	31	26	47	37	30	25	33	28	24	30	25	22	27	23	20

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	4138	4138	4138
5°	4144	4073	4099
10°	4103	3994	3967
15°	4046	3862	3762
20°	3972	3681	3510
25°	3895	3478	3266
30°	3792	3269	2957
35°	3692	3045	2685
40°	3589	2813	2374
45°	3470	2556	2091
50°	3347	2295	1815
55°	3218	2017	1550
60°	3069	1726	1277
65°	2898	1431	1151
70°	2691	1155	1043
75°	2430	1020	951
80°	2053	858	829
85°	1429	578	632

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 3470 cd/sqm

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	552.6	2.9
10°-20°	1517.1	7.9
20°-30°	2130.0	11.1
30°-40°	2321.8	12.1
40°-50°	2134.0	11.1
50°-60°	1675.9	8.7
60°-70°	1090.9	5.7
70°-80°	561.5	2.9
80°-90°	150.6	0.8
90°-100°	157.1	0.8
100°-110°	499.0	2.6
110°-120°	854.0	4.4
120°-130°	1123.1	5.8
130°-140°	1260.7	6.6
140°-150°	1236.2	6.4
150°-160°	1037.0	5.4
160°-170°	687.7	3.6
170°-180°	240.4	1.3
0°-30°	4199.7	21.8
0°-40°	6521.6	33.9
0°-60°	10331.5	53.7
0°-90°	12134.4	63.1
90°-120°	1510.1	7.9
90°-150°	5130.1	26.7
90°-180°	7095.0	36.9
0°-180°	19229.7	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	5897	5897	5897	5897	5897	
5°	5897	5870	5800	5848	5833	559
15°	5608	5550	5368	5267	5214	1580
25°	5091	4920	4568	4349	4269	2341
35°	4387	4114	3645	3309	3191	2746
45°	3586	3228	2668	2289	2161	2769
55°	2727	2310	1734	1414	1313	2437
65°	1841	1409	928	747	731	1825
75°	982	608	427	390	384	1038
85°	229	117	101	101	101	263
90°	2	28	75	70	73	19
95°	112	133	137	137	133	124
105°	461	467	471	475	475	486
115°	857	869	865	863	857	848
125°	1246	1266	1260	1253	1250	1114
135°	1612	1636	1641	1638	1632	1246
145°	1957	1973	1985	1987	1979	1223
155°	2238	2244	2251	2262	2255	1030
165°	2435	2432	2432	2448	2437	687
175°	2534	2527	2523	2538	2525	241
180°	2538	2538	2538	2538	2538	

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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	5896.7	5896.7	5896.7	5896.7	5896.7
2.5°	5923.3	5896.7	5837.8	5891.6	5880.8
5°	5896.7	5870.0	5800.4	5848.5	5832.7
7.5°	5848.5	5816.8	5742.1	5763.0	5736.5
10°	5784.6	5747.3	5640.8	5624.4	5592.6
12.5°	5704.7	5656.7	5512.3	5480.5	5421.7
15°	5608.5	5549.6	5368.5	5267.1	5213.8
17.5°	5496.4	5410.9	5186.7	5069.5	4984.0
20°	5368.5	5261.4	4994.7	4861.7	4744.0
22.5°	5229.7	5106.8	4797.1	4616.0	4536.1
25°	5091.0	4920.0	4567.9	4349.3	4269.0
27.5°	4925.7	4744.0	4354.4	4103.7	3980.8
30°	4749.6	4546.4	4119.4	3847.7	3703.4
32.5°	4578.7	4332.9	3895.8	3575.4	3441.7
35°	4386.7	4114.4	3645.0	3308.7	3191.0
37.5°	4199.9	3906.0	3410.1	3041.4	2908.4
40°	4002.3	3682.4	3164.3	2785.5	2646.9
42.5°	3799.6	3458.1	2919.2	2524.0	2390.9
45°	3586.1	3228.3	2668.4	2289.0	2161.1
47.5°	3383.4	3004.7	2428.3	2049.0	1931.8
50°	3159.2	2780.4	2193.3	1824.8	1713.2
52.5°	2940.1	2539.9	1969.2	1617.0	1515.6
55°	2726.7	2310.5	1734.2	1414.3	1313.0
57.5°	2508.1	2081.3	1526.4	1227.4	1141.9
60°	2283.9	1857.1	1307.2	1035.5	950.0
62.5°	2065.4	1638.5	1120.4	864.5	822.1
65°	1841.2	1408.6	928.5	747.3	730.9
67.5°	1627.7	1195.2	747.3	656.2	640.3
70°	1403.6	987.4	618.8	565.6	544.1
72.5°	1190.1	794.9	517.5	475.0	464.2
75°	981.8	608.1	426.9	389.5	384.4
77.5°	773.9	431.9	336.3	314.8	304.1
80°	581.5	309.7	255.9	235.0	235.0
82.5°	405.4	208.4	176.1	165.3	165.3
85°	229.3	117.2	101.4	101.4	101.4
87.5°	85.5	42.4	42.4	37.4	37.4
90°	2.3	27.6	75.0	70.4	72.7
92.5°	47.4	64.3	66.6	68.8	68.8
95°	111.7	133.1	137.0	137.0	133.1
97.5°	185.9	205.8	214.3	214.3	214.3
100°	271.6	289.3	295.3	295.3	293.1
102.5°	361.9	375.0	383.3	385.7	383.3
105°	460.7	466.7	471.4	475.2	475.2
107.5°	558.6	567.8	567.8	569.3	558.6
110°	653.4	665.8	665.8	665.8	659.6

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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	756.0	769.0	766.7	760.6	756.0
115°	857.0	869.2	865.4	863.2	857.0
117.5°	957.3	974.1	963.4	957.3	951.1
120°	1058.3	1075.0	1058.3	1058.3	1051.3
122.5°	1150.0	1171.5	1160.8	1154.7	1150.0
125°	1246.5	1265.6	1259.5	1252.6	1250.4
127.5°	1340.6	1364.3	1355.9	1346.8	1340.6
130°	1428.6	1456.2	1452.3	1447.7	1439.3
132.5°	1527.3	1548.7	1550.2	1539.5	1533.5
135°	1612.2	1635.9	1640.6	1638.3	1632.2
137.5°	1707.1	1726.3	1730.1	1728.6	1719.4
140°	1790.6	1809.6	1820.3	1820.3	1812.0
142.5°	1876.2	1895.3	1901.5	1903.8	1895.3
145°	1957.4	1972.6	1984.9	1987.2	1978.8
147.5°	2030.1	2049.2	2058.3	2062.2	2053.8
150°	2105.1	2118.1	2126.5	2133.3	2126.5
152.5°	2171.6	2184.6	2195.3	2203.8	2195.3
155°	2238.2	2244.3	2251.2	2261.9	2255.0
157.5°	2295.5	2300.2	2304.0	2319.2	2308.5
160°	2346.8	2351.4	2353.8	2366.7	2357.5
162.5°	2394.2	2394.2	2396.6	2411.1	2400.4
165°	2434.8	2432.5	2432.5	2447.8	2437.1
167.5°	2471.6	2464.7	2464.7	2479.9	2469.2
170°	2499.1	2493.0	2490.7	2506.0	2493.0
172.5°	2518.2	2512.1	2509.8	2525.1	2512.1
175°	2533.5	2527.4	2522.8	2538.2	2525.1
177.5°	2541.9	2535.8	2531.2	2544.2	2531.2
180°	2538.2	2538.2	2538.2	2538.2	2538.2

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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	13.24	14.19	14.08	15.05	16.12	9.20	10.15	10.04	11.01	12.08
	3H	14.93	15.78	15.78	16.65	17.75	10.39	11.24	11.25	12.11	13.21
	4H	15.54	16.35	16.42	17.22	18.33	10.85	11.65	11.72	12.53	13.64
	6H	15.98	16.71	16.86	17.60	18.72	11.18	11.92	12.06	12.80	13.92
	8H	16.11	16.81	17.00	17.71	18.83	11.27	11.97	12.17	12.88	14.00
	12H	16.17	16.84	17.07	17.74	18.89	11.32	11.99	12.22	12.88	14.03
4H	2H	13.27	14.07	14.15	14.95	16.06	9.81	10.61	10.69	11.49	12.60
	3H	15.11	15.78	16.00	16.69	17.81	11.17	11.84	12.06	12.74	13.87
	4H	15.81	16.42	16.71	17.32	18.48	11.72	12.33	12.62	13.23	14.39
	6H	16.34	16.86	17.25	17.79	18.95	12.15	12.67	13.06	13.60	14.76
	8H	16.52	17.01	17.44	17.93	19.10	12.28	12.77	13.20	13.69	14.86
	12H	16.62	17.06	17.56	18.00	19.18	12.35	12.79	13.29	13.73	14.91
8H	4H	15.79	16.28	16.71	17.20	18.37	12.02	12.50	12.93	13.43	14.59
	6H	16.37	16.77	17.31	17.73	18.90	12.54	12.94	13.48	13.91	15.07
	8H	16.59	16.94	17.54	17.90	19.08	12.73	13.09	13.68	14.04	15.23
	12H	16.73	17.05	17.69	17.99	19.23	12.86	13.17	13.81	14.12	15.35
12H	4H	15.75	16.19	16.68	17.13	18.30	12.03	12.46	12.96	13.41	14.58
	6H	16.34	16.70	17.29	17.65	18.84	12.59	12.95	13.54	13.90	15.09
	8H	16.57	16.88	17.52	17.83	19.07	12.81	13.12	13.76	14.07	15.30