

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: P926052

Luminaire Tested: DFN2DIP-SQ4F0-160D070US950-FLLFLL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P926052
REPORT IS A COMBINATION OF REPORTS P900093 AND P896915
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-SQ4F0-160D070US950-FLLFLL
Description: 4 foot, Square Define Geo, with Direct Frosted Lens, Indirect Frosted Lens
Light Source: -
Ballast/Driver: -

Summary

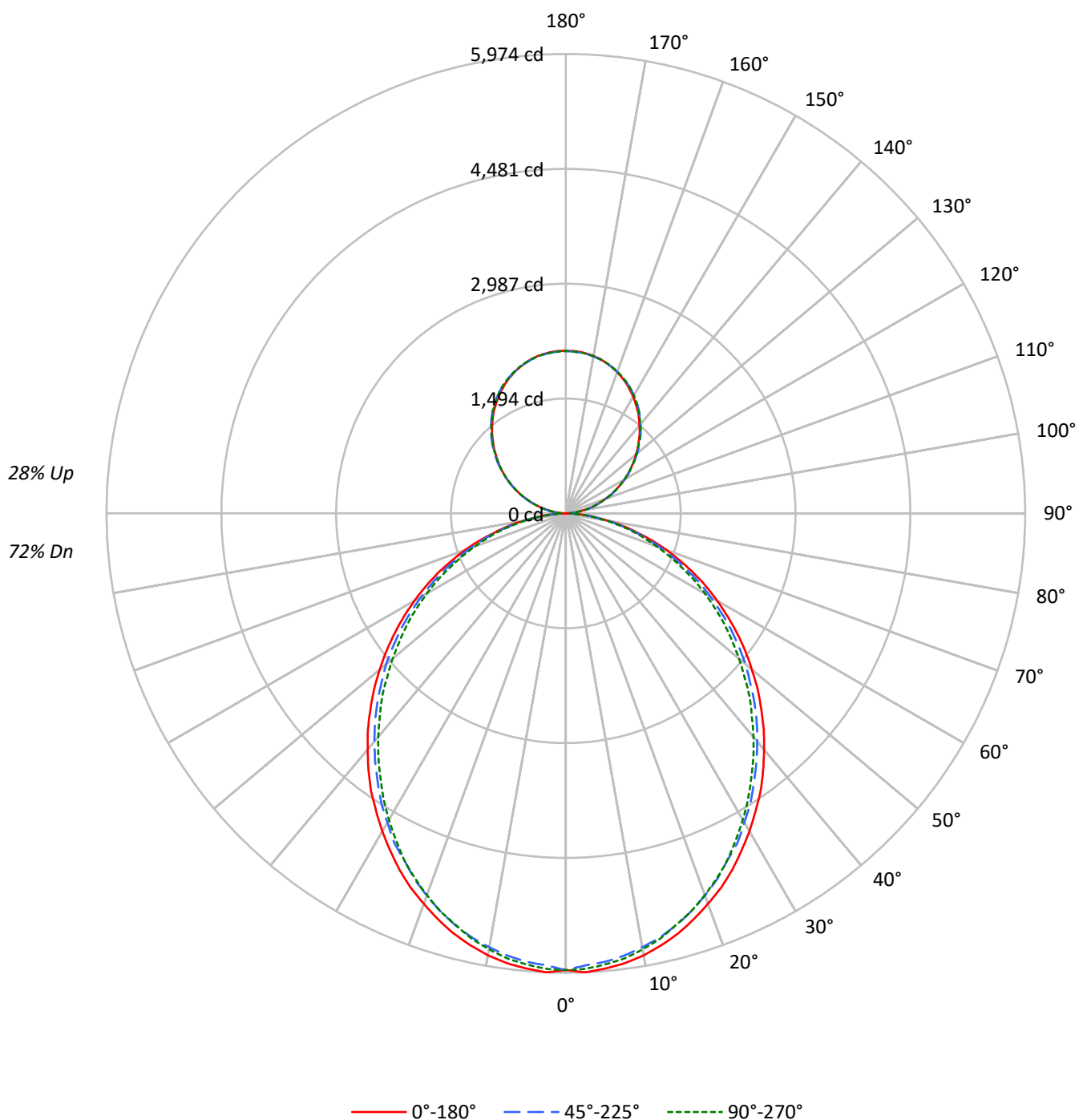
Lumens per Lamp: N/A
Luminaire Lumens: 21021.4 lumens
Efficiency: N/A
Efficacy: 96.0 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.92' x L: 3.92' x H: 0.1')
CIE Type: Semi-Direct

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	96	96	96	85	85	85	76	76	76
1	103	98	94	91	97	93	90	86	84	81	79	75	73	71	67	66	64
2	94	86	79	74	88	82	76	71	74	69	65	66	63	60	59	57	54
3	85	76	68	62	81	72	65	59	65	59	55	59	54	51	53	49	46
4	78	67	59	52	74	64	56	51	58	52	47	52	47	43	47	43	40
5	72	60	51	45	68	57	49	44	52	45	41	47	42	38	42	38	35
6	66	54	45	39	63	51	44	38	47	40	36	43	37	33	39	34	31
7	61	49	40	35	58	47	39	34	43	36	31	39	33	29	35	31	27
8	57	44	36	31	54	43	35	30	39	33	28	36	30	26	32	28	25
9	53	41	33	28	51	39	32	27	36	30	25	33	28	24	30	25	22
10	50	37	30	25	47	36	29	24	33	27	23	30	25	22	28	23	20

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	4167	4167	4167
5°	4174	4110	4138
10°	4140	4056	4083
15°	4079	3990	3997
20°	3997	3898	3909
25°	3915	3788	3806
30°	3812	3685	3675
35°	3715	3564	3537
40°	3595	3442	3406
45°	3476	3320	3272
50°	3346	3192	3116
55°	3209	3043	2973
60°	3054	2867	2809
65°	2886	2684	2616
70°	2672	2462	2409
75°	2374	2196	2220
80°	2017	1857	1855
85°	1458	1270	1246

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 3476 cd/sqm

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	559.0	2.7
10°-20°	1572.8	7.5
20°-30°	2311.4	11.0
30°-40°	2684.6	12.8
40°-50°	2681.3	12.8
50°-60°	2338.0	11.1
60°-70°	1728.3	8.2
70°-80°	977.8	4.7
80°-90°	264.1	1.3
90°-100°	130.7	0.6
100°-110°	415.3	2.0
110°-120°	710.6	3.4
120°-130°	934.6	4.4
130°-140°	1049.0	5.0
140°-150°	1028.7	4.9
150°-160°	862.9	4.1
160°-170°	572.3	2.7
170°-180°	200.0	1.0
0°-30°	4443.3	21.1
0°-40°	7127.9	33.9
0°-60°	12147.2	57.8
0°-90°	15117.3	71.9
90°-120°	1256.6	6.0
90°-150°	4268.9	20.3
90°-180°	5904.0	28.1
0°-180°	21021.4	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	5939	5939	5939	5939	5939	
5°	5939	5917	5854	5899	5888	564
15°	5654	5620	5545	5568	5540	1592
25°	5117	5072	4975	4986	4975	2355
35°	4415	4358	4266	4232	4203	2757
45°	3593	3552	3466	3404	3381	2773
55°	2719	2684	2616	2547	2519	2431
65°	1834	1799	1742	1691	1662	1813
75°	959	948	919	885	897	1024
85°	234	228	223	205	200	261
90°	2	23	62	59	60	20
95°	93	111	114	114	111	103
105°	383	388	392	395	395	405
115°	713	723	720	718	713	705
125°	1037	1053	1048	1042	1040	927
135°	1342	1361	1365	1363	1358	1037
145°	1629	1642	1652	1654	1647	1018
155°	1862	1868	1873	1882	1876	857
165°	2026	2024	2024	2037	2028	572
175°	2108	2103	2099	2112	2101	200
180°	2112	2112	2112	2112	2112	

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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	5939.3	5939.3	5939.3	5939.3	5939.3
2.5°	5973.9	5945.3	5882.4	5939.3	5928.3
5°	5939.3	5916.9	5853.8	5899.3	5888.4
7.5°	5899.3	5865.4	5802.3	5848.4	5836.9
10°	5836.9	5796.9	5728.5	5773.9	5756.9
12.5°	5750.9	5716.9	5648.4	5677.0	5665.4
15°	5653.9	5620.0	5545.4	5568.5	5540.0
17.5°	5534.0	5500.0	5425.5	5453.9	5425.5
20°	5402.4	5368.5	5288.5	5305.5	5283.1
22.5°	5271.6	5220.1	5145.5	5145.5	5134.0
25°	5117.1	5071.7	4974.6	4985.6	4974.6
27.5°	4945.5	4905.6	4831.6	4814.7	4786.2
30°	4774.7	4728.7	4643.2	4626.2	4603.2
32.5°	4591.7	4557.8	4466.2	4431.7	4408.7
35°	4414.8	4357.9	4266.3	4231.8	4203.3
37.5°	4214.9	4163.4	4071.9	4031.8	4003.4
40°	4009.4	3963.4	3871.9	3821.0	3798.0
42.5°	3809.5	3763.4	3672.5	3615.0	3581.0
45°	3592.6	3552.5	3466.5	3404.1	3381.1
47.5°	3381.1	3341.1	3249.6	3186.6	3152.7
50°	3158.1	3129.6	3049.7	2969.6	2941.2
52.5°	2941.2	2901.2	2827.3	2764.2	2724.2
55°	2718.8	2684.3	2615.8	2547.3	2518.8
57.5°	2495.9	2467.3	2392.8	2324.3	2301.3
60°	2272.8	2250.4	2170.4	2107.4	2090.4
62.5°	2055.9	2015.9	1958.9	1902.0	1879.0
65°	1833.5	1799.0	1742.0	1690.6	1662.1
67.5°	1605.1	1576.0	1525.2	1485.1	1462.1
70°	1393.6	1370.6	1319.1	1279.1	1256.7
72.5°	1176.7	1153.7	1125.2	1085.2	1068.3
75°	959.2	948.3	919.2	885.2	896.8
77.5°	765.3	742.3	730.8	713.8	696.8
80°	571.4	565.3	553.8	536.8	525.4
82.5°	388.4	388.4	382.9	359.9	359.9
85°	233.9	228.4	222.9	205.4	200.0
87.5°	103.0	91.5	79.9	63.1	57.0
90°	1.9	22.9	62.4	58.6	60.5
92.5°	39.5	53.5	55.4	57.3	57.3
95°	92.9	110.8	114.0	114.0	110.8
97.5°	154.7	171.2	178.3	178.3	178.3
100°	226.0	240.7	245.8	245.8	243.8
102.5°	301.2	312.0	319.0	320.9	319.0
105°	383.3	388.4	392.2	395.4	395.4
107.5°	464.8	472.4	472.4	473.8	464.8
110°	543.8	554.0	554.0	554.0	548.8

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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	629.1	639.9	638.0	632.9	629.1
115°	713.1	723.3	720.2	718.3	713.1
117.5°	796.5	810.5	801.6	796.5	791.4
120°	880.5	894.6	880.5	880.5	874.8
122.5°	957.0	974.8	965.9	960.8	957.0
125°	1037.2	1053.1	1048.1	1042.3	1040.4
127.5°	1115.5	1135.3	1128.3	1120.7	1115.5
130°	1188.8	1211.7	1208.5	1204.7	1197.7
132.5°	1270.9	1288.8	1290.0	1281.1	1276.0
135°	1341.6	1361.3	1365.2	1363.2	1358.1
137.5°	1420.5	1436.4	1439.6	1438.3	1430.7
140°	1490.0	1505.9	1514.8	1514.8	1507.8
142.5°	1561.2	1577.2	1582.2	1584.1	1577.2
145°	1628.8	1641.5	1651.7	1653.6	1646.6
147.5°	1689.2	1705.2	1712.8	1716.0	1709.0
150°	1751.6	1762.4	1769.5	1775.2	1769.5
152.5°	1807.0	1817.8	1826.7	1833.8	1826.7
155°	1862.4	1867.5	1873.3	1882.1	1876.4
157.5°	1910.2	1914.0	1917.2	1929.9	1921.0
160°	1952.8	1956.7	1958.6	1969.3	1961.7
162.5°	1992.3	1992.3	1994.2	2006.3	1997.4
165°	2026.0	2024.1	2024.1	2036.9	2027.9
167.5°	2056.6	2050.9	2050.9	2063.6	2054.7
170°	2079.5	2074.5	2072.6	2085.3	2074.5
172.5°	2095.5	2090.3	2088.4	2101.2	2090.3
175°	2108.1	2103.1	2099.3	2112.0	2101.2
177.5°	2115.2	2110.1	2106.2	2117.1	2106.2
180°	2112.0	2112.0	2112.0	2112.0	2112.0

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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	14.06	15.16	14.80	15.92	16.84	13.61	14.71	14.36	15.48	16.40
	3H	15.74	16.73	16.50	17.50	18.45	15.25	16.24	16.01	17.01	17.96
	4H	16.34	17.27	17.12	18.06	19.02	15.85	16.78	16.62	17.56	18.53
	6H	16.76	17.62	17.54	18.41	19.39	16.26	17.12	17.04	17.91	18.89
	8H	16.87	17.69	17.67	18.50	19.48	16.37	17.19	17.17	18.00	18.98
	12H	16.93	17.71	17.73	18.52	19.52	16.42	17.20	17.22	18.01	19.01
4H	2H	14.55	15.48	15.33	16.26	17.23	14.19	15.13	14.97	15.91	16.87
	3H	16.44	17.22	17.23	18.04	19.02	16.03	16.81	16.82	17.63	18.61
	4H	17.17	17.88	17.97	18.69	19.70	16.74	17.45	17.55	18.27	19.28
	6H	17.70	18.31	18.52	19.16	20.17	17.27	17.88	18.09	18.72	19.74
	8H	17.86	18.43	18.68	19.27	20.29	17.42	17.99	18.25	18.83	19.86
	12H	17.94	18.46	18.79	19.32	20.35	17.49	18.01	18.34	18.87	19.90
8H	4H	17.38	17.96	18.21	18.79	19.82	17.01	17.58	17.83	18.42	19.44
	6H	18.03	18.50	18.88	19.38	20.41	17.64	18.12	18.50	19.00	20.03
	8H	18.25	18.68	19.12	19.55	20.60	17.86	18.28	18.73	19.16	20.20
	12H	18.40	18.77	19.27	19.64	20.74	17.99	18.36	18.86	19.23	20.33
12H	4H	17.38	17.90	18.23	18.76	19.79	17.01	17.53	17.86	18.39	19.42
	6H	18.06	18.48	18.93	19.36	20.40	17.69	18.11	18.55	18.99	20.03
	8H	18.32	18.69	19.19	19.56	20.65	17.94	18.31	18.81	19.18	20.27