

Scaled data based on original data using  
LM-79-08 Approved Method: Electrical and Photometric Measurements of Solid-State  
Lighting Products

Test Report Prepared for

Cooper Lighting Solutions

(formerly Eaton)

Brand: NEO-RAY

Report Number: P231559

Luminaire Tested: **S123-DR-1-27-X-0048-1-U-DD-3-W**

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-79-08  
Report Number: P231559  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (P29684)  
Test Lab: INNOVATION CENTER-P2  
Issue Date: 3/3/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: NEO-RAY  
Catalog Number: S123-DR-1-27-X-0048-1-U-DD-3-W  
Description: DEFINE 3 LED LINEAR DIRECT RECESSED LED LUMINAIRE WITH ASYMMETRIC LENS.  
Light Source: 2700K CCT, 90 CRI LEDS  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 2452.0 lumens  
Efficiency: N/A  
Efficacy: 87.9 lumens/watt  
Spacing Criteria (0/90/45): 1.33 / 1.22 / 1.46  
Luminous Opening: Rectangular (W 3.92' x L: 0.22' x H: 0')  
CIE Type: Direct

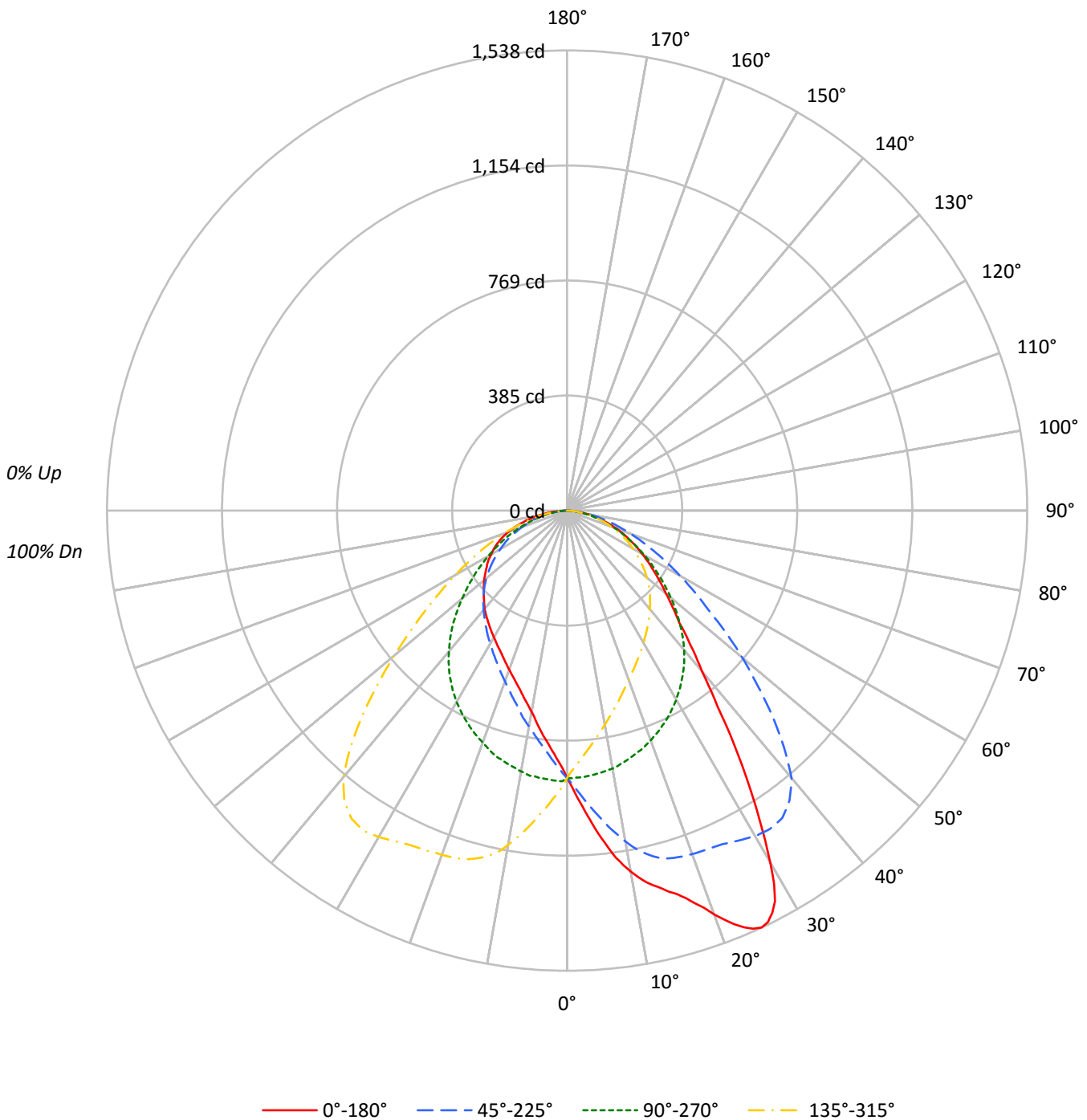
Input Watts (W): 27.9  
Input Voltage (V): 120  
Input Current (A<sub>in</sub>): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 25 FT



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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	0
RW	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	0
RCR																		
0	119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102	100
1	109	105	101	97	107	103	99	96	98	95	93	95	92	90	91	89	87	85
2	100	92	86	80	98	90	84	79	87	82	78	84	79	76	81	77	74	72
3	92	82	74	68	89	80	73	67	77	71	66	74	69	65	72	67	64	61
4	84	73	64	58	82	71	64	57	69	62	57	67	61	56	65	59	55	53
5	78	65	57	50	76	64	56	50	62	55	49	60	54	49	58	53	48	46
6	72	59	50	44	70	58	50	44	56	49	44	55	48	43	53	47	43	41
7	67	54	45	39	65	53	45	39	51	44	39	50	43	39	49	43	38	36
8	62	49	41	35	61	48	41	35	47	40	35	46	39	35	45	39	34	33
9	58	45	37	32	57	45	37	32	43	36	31	42	36	31	41	35	31	29
10	55	42	34	29	53	41	34	29	40	33	29	39	33	29	38	33	28	27

**AVERAGE LUMINANCE (cd/sqm):**

	0°	90°	180°	270°
0°	11000	11000	11000	11000
5°	13168	10976	9573	11109
10°	15308	10939	8537	11064
15°	16807	10817	7847	10955
20°	18813	10706	7410	10806
25°	20879	10555	7117	10660
30°	19306	10366	6955	10498
35°	14972	10113	6889	10251
40°	11248	9771	6896	9884
45°	9230	9270	6851	9404
50°	8262	8645	6931	8779
55°	7619	7982	7038	8149
60°	7143	7333	7219	7485
65°	6675	6698	7464	6878
70°	6276	5970	7553	6139
75°	5687	5212	7375	5397
80°	5032	4267	6896	4486
85°	4039	3163	6213	3488



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	86.9	3.5
10°-20°	260.4	10.6
20°-30°	415.2	16.9
30°-40°	478.2	19.5
40°-50°	435.5	17.8
50°-60°	353.1	14.4
60°-70°	250.7	10.2
70°-80°	136.0	5.5
80°-90°	35.9	1.5
90°-100°	0.0	0.0
100°-110°	0.0	0.0
110°-120°	0.0	0.0
120°-130°	0.0	0.0
130°-140°	0.0	0.0
140°-150°	0.0	0.0
150°-160°	0.0	0.0
160°-170°	0.0	0.0
170°-180°	0.0	0.0
0°-30°	762.5	31.1
0°-40°	1240.7	50.6
0°-60°	2029.3	82.8
0°-90°	2452.0	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	2452.0	100.0

**CANDELA DISTRIBUTION:**

	0°	90°	180°	270°	360°	Flux
0°	894	894	894	894	894	
5°	1066	888	775	899	1066	107
15°	1319	849	616	860	1319	378
25°	1538	777	524	785	1538	688
35°	996	673	458	682	996	624
45°	530	533	394	540	530	420
55°	355	372	328	380	355	319
65°	229	230	256	236	229	229
75°	120	110	155	114	120	127
85°	29	22	44	25	29	34
90°	0	0	0	0	0	



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**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
0°	893.8	893.8	893.8	893.8	893.8	893.8	893.8	893.8	893.8	893.8	893.8
1°	923.1	917.0	913.1	896.9	894.6	877.6	870.7	864.5	862.2	866.0	877.6
2°	957.9	946.3	934.7	907.7	893.0	866.8	852.9	841.3	838.2	842.9	858.3
3°	991.8	976.4	957.9	918.5	893.0	856.8	835.1	818.9	815.1	820.5	841.3
4°	1028.1	1008.8	981.0	928.5	890.7	846.0	818.2	798.9	795.0	799.6	823.6
5°	1065.9	1042.0	1005.0	939.3	888.4	832.8	802.0	778.8	774.9	779.6	806.6
6°	1100.7	1075.2	1028.9	950.2	886.9	825.1	785.7	761.0	757.2	761.0	791.2
7°	1136.9	1109.2	1053.6	960.2	883.8	813.5	770.3	743.3	738.7	744.1	775.7
8°	1171.7	1140.8	1078.3	970.2	880.7	802.7	755.6	726.3	720.1	726.3	761.0
9°	1199.5	1168.6	1099.9	979.5	877.6	791.9	741.0	710.1	699.3	710.1	746.4
10°	1224.9	1194.8	1123.0	988.7	875.3	781.1	726.3	693.9	683.1	693.9	732.5
11°	1248.1	1217.2	1143.9	997.2	871.4	771.1	712.4	679.2	668.4	678.5	720.1
12°	1269.7	1238.1	1162.4	1008.8	865.2	761.0	698.5	664.6	654.5	663.8	708.6
13°	1285.9	1254.3	1177.8	1015.0	860.6	748.7	685.4	651.4	641.4	650.7	693.1
14°	1300.6	1270.5	1191.0	1021.9	854.4	737.1	672.3	637.6	628.3	638.3	678.5
15°	1319.1	1283.6	1202.5	1028.1	849.0	726.3	660.7	625.2	615.9	626.0	665.3
16°	1333.8	1296.7	1209.5	1033.5	842.9	715.5	647.6	613.6	605.1	615.2	653.0
17°	1354.6	1309.8	1214.1	1037.4	837.5	704.7	635.2	602.8	594.3	603.6	641.4
18°	1379.3	1323.0	1217.2	1039.7	831.3	693.9	623.7	592.0	584.3	592.0	629.1
19°	1404.0	1339.2	1220.3	1042.0	823.6	682.3	612.9	582.0	575.0	581.2	618.3
20°	1436.4	1356.9	1221.8	1041.2	817.4	672.3	602.0	572.7	565.8	571.2	607.4
21°	1464.2	1377.0	1223.4	1038.1	808.9	660.7	592.0	563.5	557.3	561.9	597.4
22°	1491.2	1398.6	1224.2	1035.8	802.0	649.9	582.0	555.0	548.0	553.4	587.4
23°	1513.6	1420.2	1225.7	1029.7	794.2	639.1	571.9	545.7	540.3	544.9	577.3
24°	1529.8	1443.4	1228.0	1022.7	785.0	628.3	562.7	538.0	531.8	536.4	567.3
25°	1537.5	1462.7	1230.3	1013.4	777.3	618.3	553.4	530.3	524.1	527.2	558.1
26°	1530.6	1475.0	1235.0	1003.4	768.0	607.4	544.2	523.3	516.4	519.5	548.8
27°	1509.7	1480.4	1240.4	991.8	758.7	596.6	535.7	516.4	510.2	512.5	540.3
28°	1479.6	1475.8	1245.8	979.5	748.7	586.6	527.2	508.7	502.5	504.8	531.0
29°	1426.4	1460.3	1250.4	966.4	739.4	576.6	518.7	500.2	495.5	497.1	522.5
30°	1358.5	1432.6	1256.6	953.2	729.4	565.8	510.2	493.2	489.4	490.1	514.1
32.5°	1173.2	1314.5	1262.0	916.2	702.4	541.1	489.4	474.7	473.9	473.1	494.0
35°	996.5	1151.6	1254.3	876.8	673.1	516.4	469.3	457.7	458.5	456.9	473.1
37.5°	825.9	984.1	1221.1	840.5	642.2	491.7	450.0	442.3	443.8	440.7	453.1
40°	700.1	834.4	1167.0	797.3	608.2	467.7	430.7	426.1	429.2	425.3	434.6
42.5°	611.3	710.9	1072.1	756.4	571.2	443.8	410.6	409.1	411.4	408.3	414.5
45°	530.3	613.6	970.2	714.0	532.6	419.1	390.6	389.0	393.6	389.0	395.2
47.5°	478.5	538.0	859.8	674.6	492.4	395.2	370.5	370.5	378.2	369.7	374.3
50°	431.5	473.1	764.1	629.8	451.5	370.5	347.3	350.4	362.0	350.4	352.7
52.5°	391.3	423.0	666.1	583.5	411.4	345.0	325.0	331.9	344.2	331.9	329.6
55°	355.1	378.2	572.7	534.9	372.0	319.5	301.0	311.1	328.0	313.4	306.4
57.5°	321.9	338.8	504.0	484.7	334.2	294.1	277.9	294.1	313.4	296.4	282.5
60°	290.2	302.6	434.6	434.6	297.9	267.1	253.9	273.2	293.3	274.8	258.6
62.5°	260.1	269.4	374.3	382.8	263.2	240.0	231.6	252.4	276.3	255.5	235.4
65°	229.2	236.2	320.3	333.4	230.0	210.7	206.9	230.8	256.3	233.9	211.5



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**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
67.5°	202.2	205.3	270.9	284.8	197.6	182.9	180.6	207.6	233.9	210.7	183.7
70°	174.4	175.2	225.4	238.5	165.9	157.5	155.9	182.2	209.9	185.2	159.8
72.5°	146.7	146.7	182.9	193.7	137.4	131.2	132.0	158.2	182.9	160.5	135.8
75°	119.6	118.9	145.1	153.6	109.6	105.7	107.3	133.5	155.1	135.1	111.1
77.5°	94.2	94.9	111.1	116.5	84.1	81.8	86.4	108.1	126.6	109.6	88.0
80°	71.0	68.7	80.3	83.4	60.2	60.2	63.3	82.6	97.3	84.1	66.4
82.5°	47.9	48.6	53.3	54.8	39.4	40.1	43.2	58.7	70.2	60.2	46.3
85°	28.6	28.6	30.9	30.9	22.4	23.2	27.8	36.3	44.0	38.6	28.6
87.5°	12.3	12.3	13.1	13.1	10.0	10.8	13.1	17.8	21.6	19.3	14.7
90°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0



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CATALOG NUMBER: S123-DR-1-27-X-0048-1-U-DD-3-W

**CANDELA DISTRIBUTION (continued):**

	247.5°	270°	292.5°	315°	337.5°	360°
0°	893.8	893.8	893.8	893.8	893.8	893.8
1°	881.5	904.6	905.4	923.1	927.8	923.1
2°	871.4	903.8	917.7	945.5	957.9	957.9
3°	860.6	903.1	927.8	969.4	989.5	991.8
4°	849.0	900.8	939.3	993.4	1021.2	1028.1
5°	838.2	899.2	948.6	1016.5	1053.6	1065.9
6°	827.4	897.7	960.2	1041.2	1087.5	1100.7
7°	817.4	894.6	971.0	1065.9	1120.0	1136.9
8°	806.6	894.6	981.0	1089.9	1151.6	1171.7
9°	798.9	889.9	994.9	1112.2	1180.9	1199.5
10°	785.0	885.3	1001.1	1133.9	1206.4	1224.9
11°	773.4	879.9	1008.8	1155.5	1228.8	1248.1
12°	761.8	875.3	1018.1	1173.2	1248.1	1269.7
13°	751.8	870.7	1024.3	1184.8	1264.3	1285.9
14°	741.0	865.2	1032.7	1195.6	1278.2	1300.6
15°	729.4	859.8	1038.9	1204.9	1290.5	1319.1
16°	719.4	856.0	1044.3	1212.6	1302.1	1333.8
17°	709.3	849.0	1049.7	1217.2	1316.0	1354.6
18°	698.5	841.3	1051.3	1221.1	1329.9	1379.3
19°	685.4	832.8	1052.0	1222.6	1347.7	1404.0
20°	674.6	825.1	1051.3	1224.9	1370.0	1436.4
21°	664.6	817.4	1048.2	1224.9	1394.0	1464.2
22°	653.0	810.4	1044.3	1228.8	1417.9	1491.2
23°	642.2	802.7	1040.5	1230.3	1439.5	1513.6
24°	631.4	794.2	1032.7	1231.9	1459.6	1529.8
25°	621.3	785.0	1025.8	1235.0	1476.6	1537.5
26°	610.5	776.5	1015.8	1238.1	1488.9	1530.6
27°	599.7	767.2	1004.2	1243.5	1492.0	1509.7
28°	588.9	758.0	988.7	1248.9	1485.0	1479.6
29°	578.9	747.9	975.6	1254.3	1466.5	1426.4
30°	568.9	738.7	961.7	1259.7	1435.6	1358.5
32.5°	544.9	711.6	928.5	1268.2	1311.4	1173.2
35°	519.5	682.3	888.4	1256.6	1143.9	996.5
37.5°	495.5	649.9	849.0	1223.4	975.6	825.9
40°	472.4	615.2	809.7	1163.2	824.3	700.1
42.5°	448.4	578.9	769.5	1071.3	702.4	611.3
45°	425.3	540.3	727.1	967.1	605.1	530.3
47.5°	401.4	499.4	683.9	858.3	528.7	478.5
50°	375.1	458.5	639.1	754.1	469.3	431.5
52.5°	349.6	419.1	592.0	658.4	419.1	391.3
55°	327.3	379.8	542.6	573.5	375.1	355.1
57.5°	301.0	341.9	492.4	498.6	336.5	321.9
60°	272.5	304.1	440.7	432.2	301.0	290.2
62.5°	245.4	269.4	389.0	372.0	267.1	260.1
65°	220.0	236.2	338.8	318.8	236.2	229.2





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**CANDELA DISTRIBUTION (continued):**

	247.5°	270°	292.5°	315°	337.5°	360°
67.5°	190.6	203.0	290.2	269.4	206.1	202.2
70°	161.3	170.6	243.9	225.4	173.7	174.4
72.5°	137.4	140.5	199.9	182.2	148.2	146.7
75°	111.1	113.5	157.5	145.1	120.4	119.6
77.5°	86.4	87.2	120.4	111.9	94.9	94.2
80°	64.1	63.3	86.4	81.0	68.7	71.0
82.5°	43.2	42.5	57.1	54.8	49.4	47.9
85°	26.2	24.7	33.2	32.4	29.3	28.6
87.5°	13.1	12.3	15.4	15.4	13.9	12.3
90°	0.0	0.0	0.0	0.0	0.0	0.0

(END OF REPORT)