

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: P231624

Luminaire Tested: **S123-DR-2-30-X-0048-1-U-DD-4-W**

Issue Date: 3/3/2020

Test Information

Test Method: LM-79-08
Report Number: P231624
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (P33913)
Test Lab: INNOVATION CENTER-P3
Issue Date: 3/3/2020
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: NEO-RAY
Catalog Number: S123-DR-2-30-X-0048-1-U-DD-4-W
Description: DEFINE 3 LED LINEAR DIRECT RECESSED LED LUMINAIRE WITH DROP LENS.
Light Source: 3000K CCT, 80 CRI LEDS
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 3617.7 lumens
Efficiency: N/A
Efficacy: 84.9 lumens/watt
Spacing Criteria (0/90/45): 1.19 / 1.25 / 1.37
Luminous Opening: Rectangular w/ Sides (W: 0.22' x L: 3.92' x H: 0.08')
CIE Type: Direct

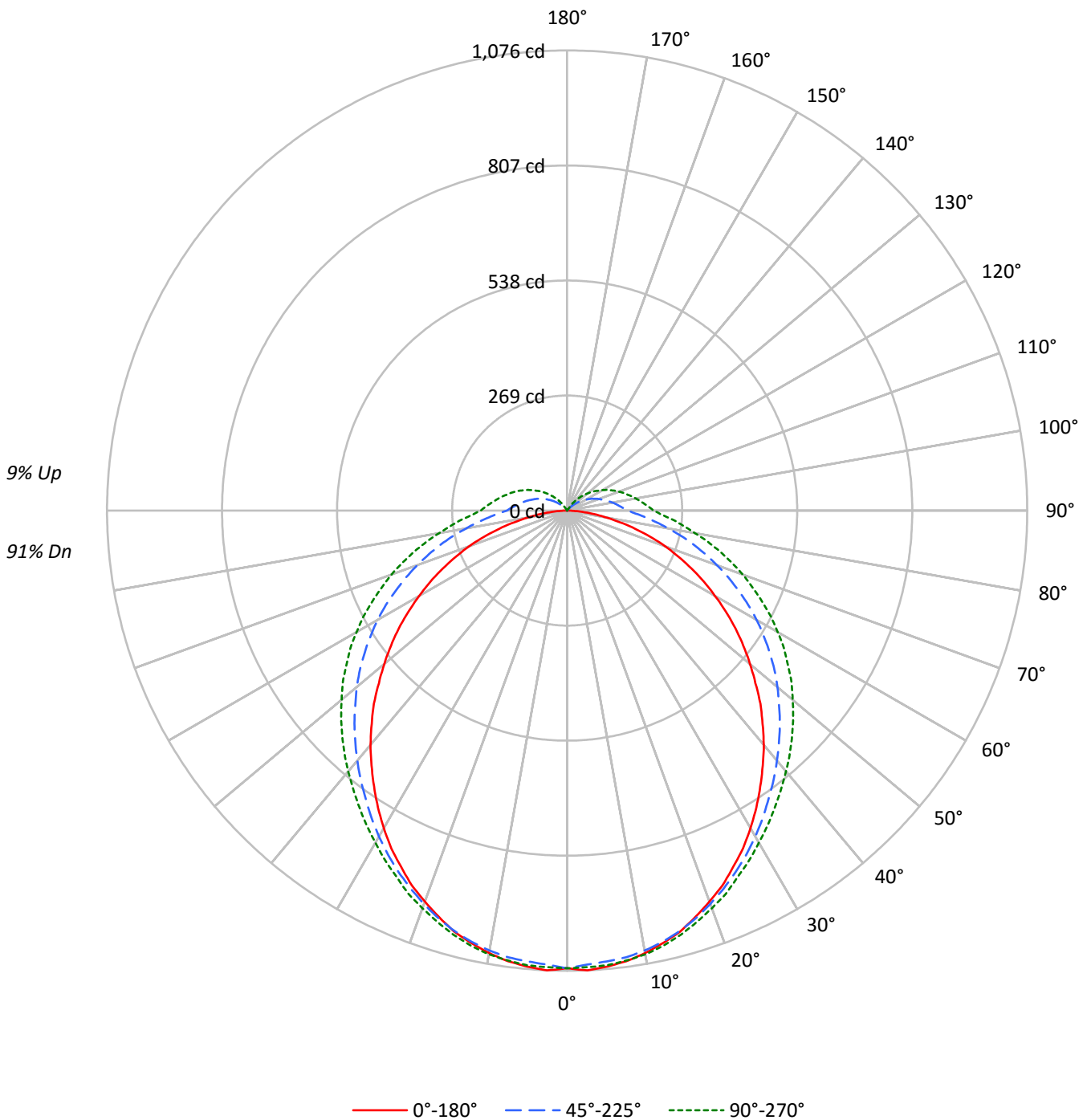
Input Watts (W): 42.6
Input Voltage (V): 120
Input Current (A_{in}): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



TEST NUMBER: P231624

CATALOG NUMBER: S123-DR-2-30-X-0048-1-U-DD-4-W

Luminous Intensity Polar Plot





TEST NUMBER: P231624

CATALOG NUMBER: S123-DR-2-30-X-0048-1-U-DD-4-W

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	117	117	117	117	113	113	113	113	106	106	106	100	100	100	94	94	94	91
1	105	100	95	90	101	96	92	88	90	87	84	85	82	79	80	78	76	73
2	95	86	79	72	91	83	76	71	78	73	68	74	69	65	69	66	62	59
3	86	75	66	59	83	73	65	58	68	62	56	64	59	54	61	56	52	49
4	79	66	57	50	76	64	56	49	61	53	48	57	51	46	54	49	44	42
5	72	59	50	43	70	57	49	42	54	47	41	51	45	40	49	43	38	36
6	67	53	44	37	64	52	43	37	49	41	36	46	40	35	44	38	34	31
7	62	48	39	33	59	47	38	32	44	37	31	42	36	31	40	34	30	28
8	57	44	35	29	55	43	34	29	41	33	28	39	32	27	37	31	27	25
9	54	40	32	26	52	39	31	26	37	30	25	36	29	25	34	28	24	22
10	50	37	29	24	49	36	28	23	35	28	23	33	27	22	32	26	22	20

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	13171	13171	13171
5°	13197	12762	12768
10°	13082	12444	12356
15°	12914	12067	11894
20°	12644	11640	11409
25°	12357	11206	10925
30°	12040	10773	10484
35°	11655	10329	10092
40°	11292	9938	9743
45°	10892	9575	9430
50°	10425	9228	9126
55°	10006	8866	8821
60°	9487	8497	8505
65°	8921	8046	8136
70°	8295	7594	7768
75°	7251	7114	7349
80°	5869	6576	6911
85°	4078	6209	6666



TEST NUMBER: P231624

CATALOG NUMBER: S123-DR-2-30-X-0048-1-U-DD-4-W

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	101.2	2.8
10°-20°	288.2	8.0
20°-30°	430.8	11.9
30°-40°	514.7	14.2
40°-50°	539.6	14.9
50°-60°	508.9	14.1
60°-70°	426.2	11.8
70°-80°	306.4	8.5
80°-90°	184.9	5.1
90°-100°	119.2	3.3
100°-110°	87.6	2.4
110°-120°	58.8	1.6
120°-130°	33.7	0.9
130°-140°	14.6	0.4
140°-150°	2.7	0.1
150°-160°	0.0	0.0
160°-170°	0.0	0.0
170°-180°	0.0	0.0
0°-30°	820.3	22.7
0°-40°	1335.0	36.9
0°-60°	2383.6	65.9
0°-90°	3301.0	91.2
90°-120°	265.6	7.3
90°-150°	316.6	8.8
90°-180°	317.0	8.8
0°-180°	3617.7	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	1070	1070	1070	1070	1070	
5°	1070	1066	1058	1068	1067	102
15°	1019	1019	1018	1029	1027	287
25°	919	927	932	946	944	424
35°	787	805	822	843	847	493
45°	639	668	704	735	744	492
55°	480	523	578	620	630	429
65°	320	376	442	489	503	318
75°	165	231	305	352	370	175
85°	36	108	184	231	248	42
90°	0	67	141	186	202	2
95°	0	55	123	168	181	0
105°	0	33	93	133	145	0
115°	0	15	66	100	112	0
125°	0	2	39	68	79	0
135°	0	0	15	37	46	0
145°	2	0	0	9	15	0
155°	0	0	0	0	0	0
165°	0	0	0	0	0	0
175°	0	0	0	0	0	0
180°	0	0	0	0	0	0



TEST NUMBER: P231624

CATALOG NUMBER: S123-DR-2-30-X-0048-1-U-DD-4-W

CANDELA DISTRIBUTION (FULL):

	0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°
0°	1070.2	1070.2	1070.2	1070.2	1070.2	1070.2	1070.2	1070.2	1070.2	1070.2	1070.2
2.5°	1076.2	1073.2	1070.2	1070.2	1071.7	1071.7	1071.7	1068.7	1067.2	1062.7	1062.7
5°	1070.2	1067.2	1064.2	1065.7	1065.7	1067.2	1067.2	1065.7	1062.7	1058.2	1061.2
7.5°	1062.7	1059.7	1056.7	1056.7	1058.2	1059.7	1059.7	1058.2	1056.7	1053.7	1055.2
10°	1050.7	1047.7	1044.7	1044.7	1046.2	1049.2	1050.7	1049.2	1047.7	1044.7	1046.2
12.5°	1035.8	1032.8	1029.8	1032.8	1034.3	1037.3	1037.3	1037.3	1035.8	1032.8	1035.8
15°	1019.3	1014.8	1013.3	1014.8	1017.8	1020.8	1022.3	1020.8	1020.8	1017.8	1020.8
17.5°	996.8	993.8	992.3	995.3	998.3	1001.3	1004.3	1002.8	1002.8	999.8	1002.8
20°	972.9	969.9	969.9	972.9	975.9	980.4	981.9	981.9	981.9	978.9	983.4
22.5°	948.9	944.5	944.5	947.4	953.4	956.4	957.9	957.9	957.9	956.4	962.4
25°	919.0	916.0	917.5	920.5	925.0	929.5	932.5	932.5	932.5	932.5	937.0
27.5°	890.6	886.1	887.6	892.1	898.1	901.0	905.5	905.5	905.5	907.0	911.5
30°	857.6	854.6	857.6	862.1	868.1	872.6	875.6	878.6	878.6	880.1	886.1
32.5°	823.2	821.7	824.7	830.7	833.7	841.2	844.2	845.7	848.7	851.7	856.1
35°	787.3	785.8	790.3	796.3	802.3	808.2	812.7	814.2	818.7	821.7	829.2
37.5°	751.4	751.4	755.9	760.4	767.8	775.3	779.8	782.8	785.8	793.3	800.8
40°	715.4	714.0	718.4	724.4	731.9	740.9	745.4	749.9	754.4	763.3	770.8
42.5°	676.5	676.5	682.5	690.0	699.0	708.0	712.5	715.4	724.4	733.4	740.9
45°	639.1	639.1	645.1	654.1	663.1	672.0	679.5	685.5	694.5	703.5	711.0
47.5°	597.2	600.2	606.2	615.2	625.6	636.1	643.6	652.6	663.1	672.0	681.0
50°	558.3	559.8	570.3	579.2	589.7	601.7	610.7	619.7	631.6	642.1	652.6
52.5°	519.4	522.4	531.3	541.8	553.8	564.3	577.7	588.2	598.7	610.7	621.2
55°	480.5	482.0	493.9	505.9	516.4	529.9	541.8	555.3	567.3	577.7	588.2
57.5°	440.0	444.5	453.5	465.5	479.0	493.9	507.4	519.4	531.3	544.8	556.8
60°	399.6	405.6	416.1	428.1	441.5	458.0	473.0	486.4	498.4	511.9	523.9
62.5°	360.7	365.2	377.2	389.2	404.1	420.6	437.1	450.5	464.0	477.5	490.9
65°	320.3	329.3	338.3	351.7	368.2	384.7	401.1	416.1	429.6	441.5	455.0
67.5°	281.4	287.4	300.8	314.3	330.8	348.7	363.7	380.2	395.1	407.1	419.1
70°	244.0	250.0	261.9	276.9	294.9	312.8	329.3	342.8	359.2	372.7	386.2
72.5°	203.6	211.0	224.5	239.5	257.4	275.4	293.4	309.8	324.8	338.3	351.7
75°	164.6	173.6	187.1	203.6	223.0	239.5	257.4	273.9	290.4	305.3	317.3
77.5°	127.2	136.2	151.2	169.1	187.1	206.6	223.0	241.0	255.9	272.4	285.9
80°	92.8	103.3	118.2	136.2	154.2	173.6	191.6	208.0	224.5	239.5	254.4
82.5°	64.4	73.3	88.3	106.3	125.7	143.7	161.6	179.6	194.6	211.0	224.5
85°	35.9	46.4	62.9	79.3	98.8	116.7	134.7	152.7	167.6	184.1	197.6
87.5°	15.0	26.9	41.9	58.4	76.3	94.3	112.3	128.7	145.2	160.2	173.6
90°	0.0	10.5	23.9	40.4	58.4	76.3	92.8	109.3	125.7	140.7	152.7
92.5°	0.0	6.0	18.0	34.4	50.9	68.9	86.8	101.8	116.7	131.7	143.7
95°	0.0	3.0	15.0	29.9	46.4	62.9	79.3	94.3	109.3	122.7	134.7
97.5°	0.0	1.5	12.0	25.4	40.4	56.9	73.3	88.3	101.8	115.3	127.2
100°	0.0	0.0	9.0	21.0	35.9	50.9	65.9	80.8	94.3	107.8	119.7
102.5°	0.0	0.0	4.5	16.5	31.4	44.9	59.9	74.8	88.3	100.3	112.3
105°	0.0	0.0	3.0	13.5	25.4	40.4	53.9	67.4	80.8	92.8	104.8
107.5°	0.0	0.0	0.0	9.0	22.5	34.4	47.9	61.4	74.8	85.3	97.3
110°	0.0	0.0	0.0	6.0	18.0	29.9	43.4	55.4	67.4	79.3	89.8



TEST NUMBER: P231624

CATALOG NUMBER: S123-DR-2-30-X-0048-1-U-DD-4-W

CANDELA DISTRIBUTION (continued):

	0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°
112.5°	0.0	0.0	0.0	3.0	13.5	25.4	37.4	49.4	61.4	71.8	82.3
115°	0.0	0.0	0.0	0.0	9.0	21.0	31.4	43.4	55.4	65.9	74.8
117.5°	0.0	0.0	0.0	0.0	6.0	16.5	26.9	37.4	47.9	58.4	67.4
120°	0.0	0.0	0.0	0.0	1.5	12.0	21.0	31.4	41.9	50.9	61.4
122.5°	0.0	0.0	0.0	0.0	0.0	7.5	16.5	26.9	35.9	44.9	53.9
125°	0.0	0.0	0.0	0.0	0.0	3.0	12.0	21.0	29.9	38.9	46.4
127.5°	0.0	0.0	0.0	0.0	0.0	0.0	7.5	15.0	23.9	31.4	40.4
130°	0.0	0.0	0.0	0.0	0.0	0.0	3.0	10.5	18.0	25.4	32.9
132.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.0	13.5	19.5	26.9
135°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5	7.5	15.0	21.0
137.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	9.0	15.0
140°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	9.0
142.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0
145°	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
147.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
150°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
152.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
155°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
157.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
160°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
162.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
165°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
167.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
170°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
172.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
175°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
177.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
180°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0



TEST NUMBER: P231624

CATALOG NUMBER: S123-DR-2-30-X-0048-1-U-DD-4-W

CANDELA DISTRIBUTION (continued):

	55°	60°	65°	70°	75°	80°	85°	90°
0°	1070.2	1070.2	1070.2	1070.2	1070.2	1070.2	1070.2	1070.2
2.5°	1067.2	1068.7	1070.2	1070.2	1070.2	1070.2	1068.7	1068.7
5°	1064.2	1067.2	1067.2	1068.7	1068.7	1068.7	1067.2	1067.2
7.5°	1059.7	1061.2	1062.7	1062.7	1064.2	1064.2	1062.7	1061.2
10°	1050.7	1053.7	1055.2	1055.2	1055.2	1055.2	1055.2	1053.7
12.5°	1040.2	1041.7	1043.2	1043.2	1043.2	1044.7	1043.2	1041.7
15°	1025.3	1028.3	1028.3	1029.8	1029.8	1029.8	1028.3	1026.8
17.5°	1007.3	1010.3	1011.8	1011.8	1011.8	1011.8	1010.3	1008.8
20°	987.9	989.4	992.3	990.9	992.3	992.3	990.9	989.4
22.5°	965.4	966.9	969.9	968.4	971.4	971.4	969.9	969.9
25°	941.5	944.5	945.9	945.9	945.9	945.9	945.9	944.5
27.5°	916.0	917.5	920.5	922.0	922.0	922.0	922.0	922.0
30°	889.1	892.1	895.1	895.1	898.1	899.5	898.1	896.6
32.5°	860.6	865.1	868.1	869.6	872.6	874.1	872.6	872.6
35°	832.2	838.2	842.7	844.2	847.2	847.2	848.7	847.2
37.5°	805.3	811.2	814.2	818.7	821.7	824.7	823.2	821.7
40°	778.3	784.3	788.8	791.8	794.8	796.3	796.3	796.3
42.5°	748.4	755.9	760.4	764.8	769.3	770.8	770.8	770.8
45°	718.4	725.9	731.9	737.9	742.4	743.9	743.9	743.9
47.5°	690.0	697.5	703.5	709.5	714.0	715.4	716.9	716.9
50°	661.6	669.0	676.5	681.0	685.5	688.5	688.5	688.5
52.5°	630.1	637.6	645.1	651.1	657.1	658.6	661.6	661.6
55°	598.7	607.7	616.7	622.6	625.6	628.6	630.1	630.1
57.5°	567.3	574.8	582.2	591.2	595.7	598.7	600.2	601.7
60°	534.3	543.3	552.3	559.8	562.8	567.3	568.8	568.8
62.5°	499.9	508.9	519.4	525.4	531.3	534.3	535.8	537.3
65°	467.0	476.0	484.9	493.9	496.9	499.9	502.9	502.9
67.5°	432.6	441.5	450.5	458.0	462.5	467.0	470.0	468.5
70°	398.1	408.6	416.1	425.1	429.6	432.6	435.6	437.1
72.5°	363.7	374.2	383.2	390.7	395.1	398.1	401.1	402.6
75°	330.8	339.8	348.7	354.7	360.7	365.2	366.7	369.7
77.5°	296.4	308.3	315.8	324.8	327.8	332.3	333.8	336.8
80°	266.4	275.4	284.4	291.9	297.9	302.3	302.3	303.8
82.5°	236.5	245.5	254.4	263.4	267.9	272.4	273.9	273.9
85°	208.0	218.5	227.5	235.0	241.0	244.0	247.0	248.5
87.5°	185.6	194.6	203.6	209.5	215.5	218.5	221.5	221.5
90°	164.6	173.6	182.6	190.1	194.6	197.6	200.6	202.1
92.5°	155.7	164.6	173.6	179.6	185.6	188.6	190.1	191.6
95°	146.7	155.7	164.6	170.6	175.1	179.6	181.1	181.1
97.5°	137.7	146.7	155.7	161.6	166.1	169.1	172.1	172.1
100°	130.2	139.2	146.7	152.7	157.2	160.2	163.1	163.1
102.5°	121.2	130.2	137.7	143.7	148.2	151.2	154.2	154.2
105°	113.8	122.7	130.2	136.2	140.7	143.7	145.2	145.2
107.5°	106.3	115.3	122.7	127.2	131.7	134.7	137.7	137.7
110°	98.8	106.3	113.8	119.7	124.2	127.2	128.7	128.7



TEST NUMBER: P231624

CATALOG NUMBER: S123-DR-2-30-X-0048-1-U-DD-4-W

CANDELA DISTRIBUTION (continued):

	55°	60°	65°	70°	75°	80°	85°	90°
112.5°	91.3	98.8	106.3	110.8	115.3	118.2	119.7	121.2
115°	83.8	91.3	97.3	103.3	107.8	109.3	112.3	112.3
117.5°	76.3	83.8	89.8	94.3	98.8	101.8	103.3	104.8
120°	68.9	74.8	82.3	86.8	91.3	92.8	95.8	95.8
122.5°	61.4	67.4	74.8	77.8	82.3	85.3	86.8	86.8
125°	53.9	61.4	65.9	70.3	74.8	76.3	77.8	79.3
127.5°	46.4	52.4	58.4	62.9	65.9	68.9	70.3	70.3
130°	38.9	44.9	50.9	55.4	58.4	59.9	61.4	62.9
132.5°	32.9	38.9	43.4	46.4	50.9	52.4	53.9	53.9
135°	25.4	31.4	35.9	38.9	41.9	44.9	44.9	46.4
137.5°	19.5	23.9	28.4	31.4	34.4	35.9	37.4	37.4
140°	13.5	18.0	21.0	23.9	26.9	28.4	29.9	29.9
142.5°	7.5	10.5	15.0	16.5	19.5	21.0	22.5	22.5
145°	1.5	4.5	7.5	10.5	12.0	13.5	15.0	15.0
147.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
150°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
152.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
155°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
157.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
160°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
162.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
165°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
167.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
170°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
172.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
175°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
177.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
180°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

(END OF REPORT)