

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: P231594

Luminaire Tested: **S121-DR-LO-40-X-0048-1-U-DD-4-W**

Issue Date: 3/3/2020

Test Information

Test Method: LM-79-08
Report Number: P231594
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (P33907)
Test Lab: INNOVATION CENTER-P3
Issue Date: 3/3/2020
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: NEO-RAY
Catalog Number: S121-DR-LO-40-X-0048-1-U-DD-4-W
Description: DEFINE 1 LED LINEAR DIRECT RECESSED LED LUMINAIRE WITH DROP LENS.
Light Source: 4000K CCT, 80 CRI LEDS
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 1255.2 lumens
Efficiency: N/A
Efficacy: 92.3 lumens/watt
Spacing Criteria (0/90/45): 1.21 / 1.42 / 1.49
Luminous Opening: Rectangular w/ Sides (W: 0.1' x L: 3.92' x H: 0.08')
CIE Type: Semi-Direct

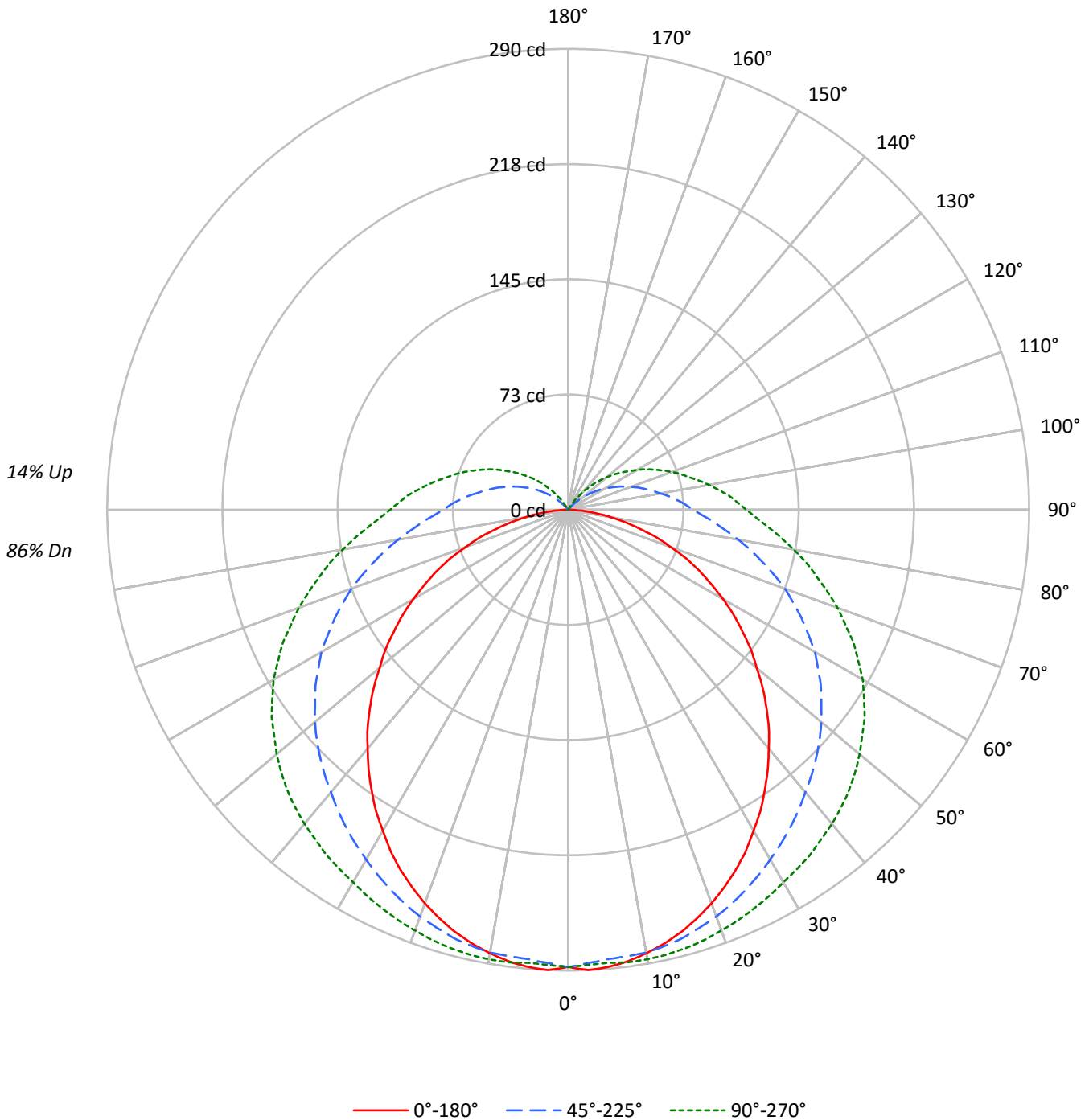
Input Watts (W): 13.6
Input Voltage (V): 120
Input Current (A_{in}): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



TEST NUMBER: P231594

CATALOG NUMBER: S121-DR-LO-40-X-0048-1-U-DD-4-W

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	116	116	116	116	112	112	112	112	104	104	104	96	96	96	90	90	90	86
1	103	97	91	86	98	93	88	84	86	82	79	80	77	74	74	72	69	66
2	92	83	75	68	88	79	72	66	74	68	62	68	63	59	63	59	56	53
3	83	72	62	55	80	69	61	54	64	57	51	59	53	49	55	50	46	43
4	76	63	53	46	72	61	52	45	56	49	43	52	46	41	48	43	39	36
5	69	56	46	39	66	54	45	38	50	42	36	47	40	35	43	38	33	31
6	64	50	40	34	61	48	39	33	45	37	32	42	35	30	39	33	29	26
7	59	45	36	29	57	44	35	29	41	33	28	38	31	27	36	30	25	23
8	55	41	32	26	53	40	31	26	37	30	25	35	28	24	33	27	23	20
9	51	37	29	23	49	36	28	23	34	27	22	32	26	21	30	24	20	18
10	48	34	26	21	46	33	26	21	31	25	20	30	23	19	28	22	18	16

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	8046	8046	8046
5°	8093	7564	7478
10°	8015	7246	7096
15°	7917	6934	6737
20°	7782	6624	6408
25°	7630	6333	6120
30°	7437	6058	5868
35°	7250	5816	5681
40°	7039	5590	5505
45°	6829	5403	5346
50°	6571	5221	5178
55°	6339	5040	5021
60°	6067	4855	4847
65°	5757	4628	4649
70°	5282	4410	4428
75°	4694	4144	4194
80°	3965	3900	3990
85°	2709	3683	3791



TEST NUMBER: P231594

CATALOG NUMBER: S121-DR-LO-40-X-0048-1-U-DD-4-W

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	27.3	2.2
10°-20°	79.0	6.3
20°-30°	121.8	9.7
30°-40°	151.9	12.1
40°-50°	167.9	13.4
50°-60°	168.4	13.4
60°-70°	153.0	12.2
70°-80°	124.3	9.9
80°-90°	90.9	7.2
90°-100°	66.3	5.3
100°-110°	47.5	3.8
110°-120°	31.1	2.5
120°-130°	17.4	1.4
130°-140°	7.2	0.6
140°-150°	1.2	0.1
150°-160°	0.0	0.0
160°-170°	0.0	0.0
170°-180°	0.0	0.0
0°-30°	228.2	18.2
0°-40°	380.1	30.3
0°-60°	716.4	57.1
0°-90°	1084.5	86.4
90°-120°	144.9	11.5
90°-150°	170.7	13.6
90°-180°	171.0	13.6
0°-180°	1255.2	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	288	288	288	288	288	
5°	289	287	284	287	286	27
15°	275	275	279	285	286	78
25°	250	255	264	275	277	115
35°	216	227	244	260	265	135
45°	176	194	221	243	250	136
55°	134	159	194	219	228	120
65°	91	122	162	189	198	90
75°	47	85	126	153	162	50
85°	10	50	92	118	126	12
90°	0	38	78	104	112	1
95°	0	30	69	93	102	0
105°	0	18	50	72	79	0
115°	0	7	34	53	60	0
125°	0	1	19	36	41	0
135°	0	0	6	19	24	0
145°	0	0	0	3	7	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: P231594

CATALOG NUMBER: S121-DR-LO-40-X-0048-1-U-DD-4-W

CANDELA DISTRIBUTION (FULL):

	0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°
0°	287.8	287.8	287.8	287.8	287.8	287.8	287.8	287.8	287.8	287.8	287.8
2.5°	290.0	288.9	287.8	288.4	288.4	288.9	287.8	287.8	286.7	285.6	285.6
5°	288.9	287.8	286.2	286.7	286.7	287.3	286.7	286.2	285.1	284.0	284.5
7.5°	286.7	285.6	284.0	284.5	284.5	284.5	284.5	284.5	284.0	283.4	284.0
10°	283.4	282.3	281.2	281.2	281.2	282.3	282.3	282.9	282.9	282.9	284.0
12.5°	279.6	278.5	277.4	277.4	277.9	279.6	280.1	280.7	281.2	281.2	282.3
15°	275.1	273.5	272.4	273.5	274.0	276.2	277.4	277.9	278.5	279.0	280.7
17.5°	269.6	268.5	266.9	268.0	269.6	272.4	273.5	274.6	275.7	275.7	277.9
20°	263.6	262.5	260.8	263.0	265.2	267.4	269.1	270.2	271.3	272.4	274.6
22.5°	256.9	255.3	254.7	257.5	259.7	262.5	264.1	265.8	266.9	268.5	271.3
25°	249.8	248.1	248.1	250.9	253.6	256.4	258.6	260.8	261.9	264.1	266.9
27.5°	242.1	240.4	241.0	244.3	246.5	250.3	252.5	255.3	256.9	259.2	262.5
30°	233.2	231.6	232.7	236.5	239.9	243.7	246.5	248.7	251.4	254.2	258.1
32.5°	225.0	222.8	224.4	228.8	232.1	236.5	239.9	242.6	245.9	249.2	253.1
35°	215.6	213.9	216.1	220.6	224.4	228.8	232.7	236.0	239.9	243.7	248.1
37.5°	206.2	204.0	207.3	211.7	216.7	221.1	225.5	228.8	233.2	238.2	243.2
40°	196.3	194.6	198.5	203.5	207.9	212.8	217.8	221.7	227.2	232.1	237.7
42.5°	186.9	185.3	189.7	194.1	199.6	205.1	210.6	214.5	220.6	226.6	232.1
45°	176.4	175.3	179.8	185.3	191.3	197.4	202.4	207.9	214.5	220.6	226.6
47.5°	166.0	164.9	169.8	175.9	182.0	188.6	194.6	201.3	207.9	214.5	220.6
50°	154.9	154.9	160.5	166.5	172.6	180.3	186.4	194.1	200.7	207.9	213.9
52.5°	145.0	145.0	150.5	156.6	163.8	171.5	179.2	186.4	194.1	200.7	207.9
55°	134.0	135.1	141.2	147.2	154.4	162.7	170.9	178.7	186.9	194.1	200.7
57.5°	123.5	125.2	130.7	137.3	145.6	154.4	162.7	170.9	178.7	186.4	193.5
60°	112.5	114.7	120.8	127.9	136.2	145.6	154.4	162.7	170.9	179.2	185.8
62.5°	101.5	104.2	110.3	117.4	126.8	136.2	145.6	153.8	162.7	170.4	177.5
65°	91.0	93.7	99.8	107.5	117.4	127.4	136.7	145.6	154.4	162.1	169.8
67.5°	80.5	83.3	89.9	98.1	108.1	118.0	127.4	136.7	145.6	153.3	160.5
70°	68.4	72.8	79.4	88.2	98.7	108.6	118.5	127.4	136.2	145.0	152.2
72.5°	58.4	62.3	69.5	78.8	88.8	99.3	109.2	118.5	127.4	135.6	142.8
75°	46.9	51.3	59.0	68.9	79.4	89.9	99.8	109.2	118.0	126.3	134.0
77.5°	36.9	41.4	49.6	59.6	70.0	80.5	91.0	100.4	109.2	117.4	124.6
80°	27.6	32.0	40.8	50.7	61.8	72.2	82.2	91.5	100.4	108.6	115.8
82.5°	18.7	23.2	32.5	42.5	52.9	63.4	73.3	82.7	91.5	99.8	107.5
85°	10.5	16.0	24.8	34.7	45.2	55.7	65.6	75.5	83.8	92.1	99.8
87.5°	4.4	10.5	18.7	28.1	38.6	49.1	59.0	67.8	77.2	84.9	92.1
90°	0.0	5.5	13.2	22.6	33.1	43.0	52.9	61.8	70.6	78.3	85.5
92.5°	0.0	3.3	10.5	19.3	29.2	39.1	48.5	57.9	66.2	73.9	81.1
95°	0.0	1.7	7.7	16.5	25.4	34.7	44.1	52.9	61.2	68.9	75.5
97.5°	0.0	0.6	6.1	13.2	22.1	31.4	40.3	49.1	56.8	64.0	70.6
100°	0.0	0.0	4.4	11.0	19.3	27.6	36.4	44.7	52.4	59.0	65.6
102.5°	0.0	0.0	2.2	8.8	16.5	24.3	32.5	40.3	48.0	54.6	61.2
105°	0.0	0.0	1.1	6.6	13.8	21.5	29.2	36.4	43.6	50.2	56.8
107.5°	0.0	0.0	0.0	4.4	11.0	18.2	25.9	33.1	40.3	46.3	51.8
110°	0.0	0.0	0.0	2.8	8.8	15.4	22.6	29.2	35.8	41.9	48.0



TEST NUMBER: P231594

CATALOG NUMBER: S121-DR-LO-40-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	1.1	6.6	12.7	19.3	25.9	32.0	38.0	43.6
115°	0.0	0.0	0.0	0.0	4.4	9.9	16.5	22.6	28.7	34.2	39.7
117.5°	0.0	0.0	0.0	0.0	2.2	7.7	13.2	19.3	24.8	30.3	35.3
120°	0.0	0.0	0.0	0.0	0.6	5.5	10.5	16.5	21.5	27.0	31.4
122.5°	0.0	0.0	0.0	0.0	0.0	2.8	7.7	13.2	18.2	23.2	27.6
125°	0.0	0.0	0.0	0.0	0.0	1.1	5.5	9.9	14.9	19.3	24.3
127.5°	0.0	0.0	0.0	0.0	0.0	0.0	2.8	7.2	11.6	16.0	20.4
130°	0.0	0.0	0.0	0.0	0.0	0.0	1.1	4.4	8.8	12.7	16.5
132.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.2	5.5	9.4	12.7
135°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	2.8	6.1	9.4
137.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	3.3	6.1
140°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	3.3
142.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6
145°	0.0	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: P231594

CATALOG NUMBER: S121-DR-LO-40-X-0048-1-U-DD-4-W

CANDELA DISTRIBUTION (continued):

	55°	60°	65°	70°	75°	80°	85°	90°
0°	287.8	287.8	287.8	287.8	287.8	287.8	287.8	287.8
2.5°	286.7	287.3	287.8	287.3	287.3	287.8	287.3	286.7
5°	285.6	286.2	286.7	286.7	287.3	287.3	286.7	286.2
7.5°	285.6	286.7	287.3	287.8	287.8	288.4	287.8	287.3
10°	285.6	286.2	287.3	287.8	287.8	288.4	287.8	287.3
12.5°	284.5	285.6	286.7	286.7	287.3	287.8	287.3	286.7
15°	282.3	283.4	285.1	285.6	286.2	286.2	285.6	285.6
17.5°	280.1	281.2	282.9	283.4	284.0	284.5	284.0	284.0
20°	276.8	278.5	280.1	281.2	281.8	282.3	282.3	281.8
22.5°	273.5	275.7	277.4	277.9	279.0	280.1	279.6	279.6
25°	269.6	271.8	274.0	275.1	276.2	277.4	276.8	276.8
27.5°	265.8	268.0	270.2	271.8	273.5	274.0	274.0	274.0
30°	260.8	264.1	266.3	268.0	269.6	270.7	270.7	270.7
32.5°	256.4	259.7	262.5	264.1	266.3	267.4	268.0	268.0
35°	252.0	255.3	258.6	260.8	263.0	264.7	264.7	265.2
37.5°	247.0	251.4	254.7	257.5	259.7	261.4	261.9	261.4
40°	242.6	247.0	250.3	253.6	255.8	257.5	258.1	258.1
42.5°	237.1	242.1	245.9	249.2	252.0	253.6	254.2	254.2
45°	232.1	237.1	241.5	244.8	247.0	248.7	249.8	249.8
47.5°	226.6	231.6	235.4	239.3	242.1	243.7	244.3	244.8
50°	220.6	225.5	229.4	233.8	236.5	238.2	238.8	239.3
52.5°	213.9	218.9	223.9	227.7	230.5	232.7	233.2	233.2
55°	207.3	212.3	217.2	221.1	224.4	226.1	227.2	227.7
57.5°	199.6	205.1	210.1	214.5	217.2	219.5	220.6	220.6
60°	192.4	198.0	202.9	207.3	210.1	212.3	212.8	213.9
62.5°	184.2	189.7	195.2	199.1	201.8	204.0	205.1	205.7
65°	175.9	182.0	187.5	190.8	193.5	196.3	197.4	198.0
67.5°	167.1	173.1	178.1	182.5	184.7	187.5	188.6	188.6
70°	158.8	164.9	169.3	173.1	176.4	178.7	179.8	180.3
72.5°	150.0	155.5	160.5	164.3	167.1	169.3	170.9	170.9
75°	140.1	146.1	151.1	154.9	158.3	160.5	161.6	161.6
77.5°	131.8	137.3	141.7	146.1	149.4	151.6	152.7	153.3
80°	122.4	127.9	132.9	136.7	140.1	142.3	143.4	143.9
82.5°	114.1	119.7	124.1	128.5	131.2	133.4	134.5	135.1
85°	105.9	111.4	116.3	119.7	123.0	124.6	126.3	126.3
87.5°	98.7	103.7	108.6	111.9	115.2	117.4	118.5	118.5
90°	91.5	97.0	101.5	105.9	108.6	110.8	111.4	111.9
92.5°	86.6	92.1	96.5	100.4	103.1	104.8	106.4	106.4
95°	81.6	86.6	91.5	94.8	97.6	99.8	100.9	101.5
97.5°	76.6	81.6	86.0	89.3	92.1	94.3	94.8	95.4
100°	71.7	76.6	80.5	83.8	86.6	88.2	89.9	89.9
102.5°	66.7	71.7	75.5	78.8	81.6	83.3	84.4	84.4
105°	61.8	66.7	70.6	73.9	76.1	78.3	78.8	78.8
107.5°	57.3	62.3	66.2	68.9	71.1	73.3	74.4	74.4
110°	52.9	57.3	61.2	64.0	66.7	68.4	69.5	69.5



TEST NUMBER: P231594

CATALOG NUMBER: S121-DR-LO-40-X-0048-1-U-DD-4-W

CANDELA DISTRIBUTION (continued):

	55°	60°	65°	70°	75°	80°	85°	90°
112.5°	48.5	52.9	56.8	59.6	61.8	63.4	64.5	64.5
115°	44.1	48.5	51.8	55.1	57.3	59.0	59.6	59.6
117.5°	40.3	44.1	47.4	50.2	52.4	54.0	55.1	55.1
120°	35.8	39.7	43.0	45.8	48.0	49.1	50.2	50.2
122.5°	32.0	35.3	38.6	41.4	43.0	44.7	45.8	45.2
125°	28.1	31.4	34.2	36.9	38.6	40.3	40.8	40.8
127.5°	23.7	27.0	30.3	32.5	34.2	35.8	36.4	36.4
130°	19.9	23.2	25.9	28.1	29.8	30.9	32.0	32.0
132.5°	16.5	19.3	22.1	23.7	25.4	26.5	27.6	27.6
135°	12.7	15.4	17.6	19.9	21.5	22.6	23.2	23.7
137.5°	8.8	11.6	13.8	16.0	17.1	18.2	18.7	18.7
140°	5.5	7.7	9.9	11.6	12.7	13.8	14.3	14.9
142.5°	2.2	4.4	6.1	7.7	8.8	9.4	9.9	9.9
145°	0.0	1.1	2.8	3.9	5.0	6.1	6.1	6.6
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)