

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: P231602

Luminaire Tested: **S121-DR-2-40-X-0048-1-U-DD-4-W**

Issue Date: 3/3/2020

Test Information

Test Method: LM-79-08
Report Number: P231602
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-2-40-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

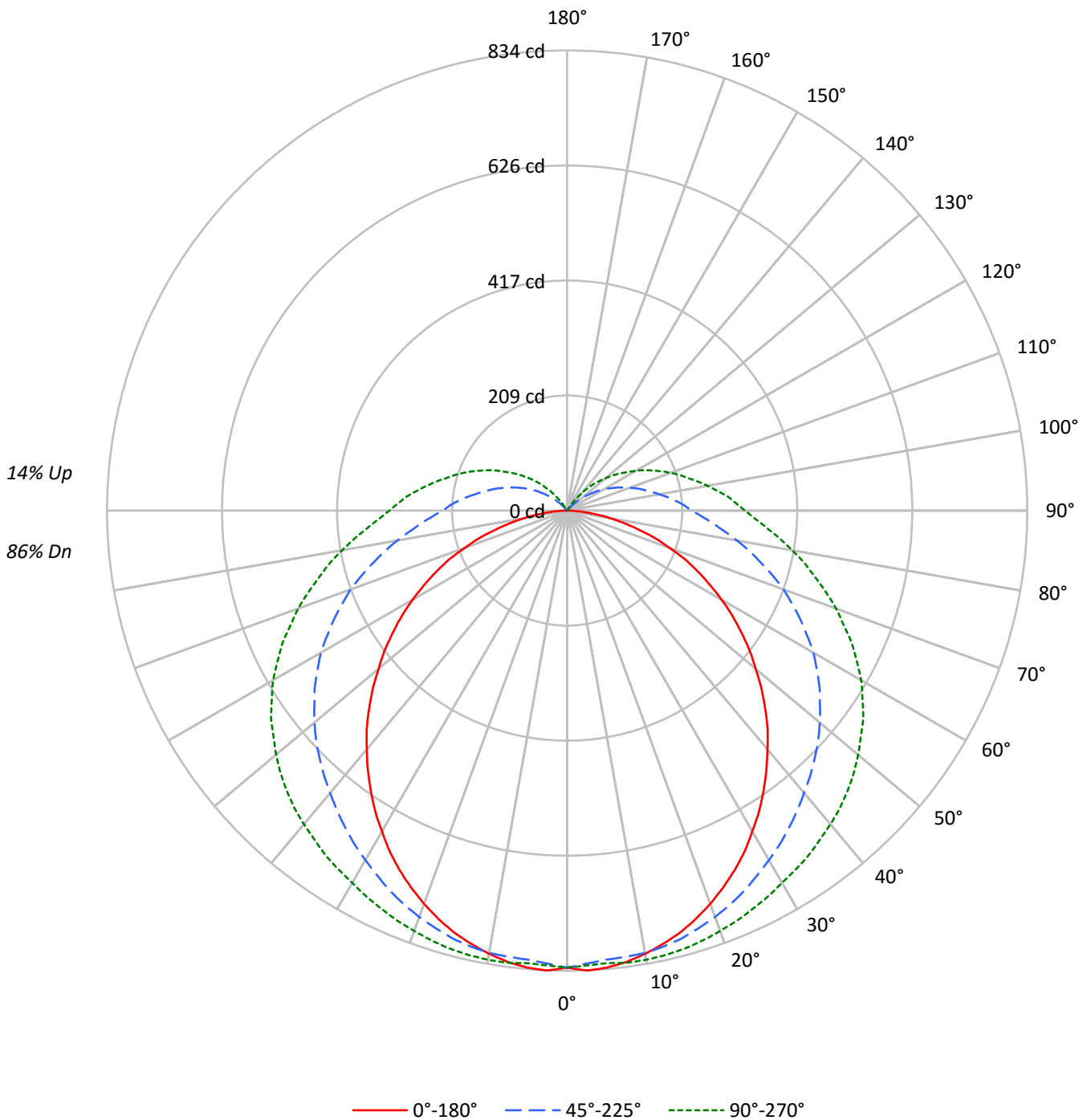
Lumens per Lamp: N/A
Luminaire Lumens: 3611.6 lumens
Efficiency: N/A
Efficacy: 84.8 lumens/watt
Spacing Criteria (0/90/45): 1.21 / 1.42 / 1.49
Luminous Opening: Rectangular w/ Sides (W: 0.1' x L: 3.92' x H: 0.08')
CIE Type: Semi-Direct

Input Watts (W): 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: P231602
CATALOG NUMBER: S121-DR-2-40-X-0048-1-U-DD-4-W

Luminous Intensity Polar Plot





TEST NUMBER: P231602

CATALOG NUMBER: S121-DR-2-40-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	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°	23154	23154	23154
5°	23289	21762	21513
10°	23064	20848	20416
15°	22785	19952	19384
20°	22390	19058	18434
25°	21952	18224	17609
30°	21402	17430	16886
35°	20860	16737	16346
40°	20251	16085	15837
45°	19655	15543	15381
50°	18910	15019	14901
55°	18236	14501	14449
60°	17457	13969	13948
65°	16563	13315	13375
70°	15191	12692	12742
75°	13500	11919	12064
80°	11393	11225	11483
85°	7767	10598	10906



TEST NUMBER: P231602

CATALOG NUMBER: S121-DR-2-40-X-0048-1-U-DD-4-W

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	78.5	2.2
10°-20°	227.4	6.3
20°-30°	350.6	9.7
30°-40°	437.1	12.1
40°-50°	483.2	13.4
50°-60°	484.5	13.4
60°-70°	440.1	12.2
70°-80°	357.5	9.9
80°-90°	261.5	7.2
90°-100°	190.9	5.3
100°-110°	136.7	3.8
110°-120°	89.4	2.5
120°-130°	50.0	1.4
130°-140°	20.7	0.6
140°-150°	3.3	0.1
150°-160°	0.0	0.0
160°-170°	0.0	0.0
170°-180°	0.0	0.0
0°-30°	656.5	18.2
0°-40°	1093.6	30.3
0°-60°	2061.3	57.1
0°-90°	3120.5	86.4
90°-120°	417.1	11.5
90°-150°	491.1	13.6
90°-180°	491.0	13.6
0°-180°	3611.6	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	828	828	828	828	828	
5°	831	826	817	825	823	79
15°	792	792	803	821	822	223
25°	719	734	760	790	796	331
35°	620	652	701	747	763	388
45°	508	559	635	700	719	391
55°	386	456	558	631	655	345
65°	262	352	466	544	570	259
75°	135	244	363	440	465	144
85°	30	145	265	340	363	35
90°	0	110	225	298	322	2
95°	0	86	198	268	292	0
105°	0	51	144	208	227	0
115°	0	21	98	154	171	0
125°	0	2	56	102	117	0
135°	0	0	18	54	68	0
145°	0	0	0	10	19	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: P231602

CATALOG NUMBER: S121-DR-2-40-X-0048-1-U-DD-4-W

CANDELA DISTRIBUTION (FULL):

	0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°
0°	828.2	828.2	828.2	828.2	828.2	828.2	828.2	828.2	828.2	828.2	828.2
2.5°	834.5	831.4	828.2	829.8	829.8	831.4	828.2	828.2	825.0	821.8	821.8
5°	831.4	828.2	823.4	825.0	825.0	826.6	825.0	823.4	820.2	817.1	818.7
7.5°	825.0	821.8	817.1	818.7	818.7	818.7	818.7	818.7	817.1	815.5	817.1
10°	815.5	812.3	809.1	809.1	809.1	812.3	812.3	813.9	813.9	813.9	817.1
12.5°	804.4	801.2	798.0	798.0	799.6	804.4	806.0	807.6	809.1	809.1	812.3
15°	791.7	786.9	783.8	786.9	788.5	794.9	798.0	799.6	801.2	802.8	807.6
17.5°	775.8	772.7	767.9	771.1	775.8	783.8	786.9	790.1	793.3	793.3	799.6
20°	758.4	755.2	750.4	756.8	763.1	769.5	774.2	777.4	780.6	783.8	790.1
22.5°	739.3	734.6	733.0	740.9	747.3	755.2	760.0	764.7	767.9	772.7	780.6
25°	718.7	713.9	713.9	721.9	729.8	737.7	744.1	750.4	753.6	760.0	767.9
27.5°	696.5	691.7	693.3	702.8	709.2	720.3	726.6	734.6	739.3	745.7	755.2
30°	671.1	666.4	669.5	680.6	690.2	701.3	709.2	715.5	723.5	731.4	742.5
32.5°	647.3	641.0	645.7	658.4	667.9	680.6	690.2	698.1	707.6	717.1	728.2
35°	620.3	615.6	621.9	634.6	645.7	658.4	669.5	679.0	690.2	701.3	713.9
37.5°	593.4	587.0	596.5	609.2	623.5	636.2	648.9	658.4	671.1	685.4	699.7
40°	564.8	560.1	571.2	585.4	598.1	612.4	626.7	637.8	653.7	667.9	683.8
42.5°	537.8	533.1	545.8	558.5	574.3	590.2	606.1	617.2	634.6	652.1	667.9
45°	507.7	504.5	517.2	533.1	550.5	568.0	582.3	598.1	617.2	634.6	652.1
47.5°	477.6	474.4	488.7	506.1	523.6	542.6	560.1	579.1	598.1	617.2	634.6
50°	445.8	445.8	461.7	479.1	496.6	518.8	536.3	558.5	577.5	598.1	615.6
52.5°	417.3	417.3	433.1	450.6	471.2	493.4	515.6	536.3	558.5	577.5	598.1
55°	385.5	388.7	406.2	423.6	444.2	468.0	491.8	514.0	537.8	558.5	577.5
57.5°	355.4	360.1	376.0	395.1	418.9	444.2	468.0	491.8	514.0	536.3	556.9
60°	323.7	330.0	347.5	368.1	391.9	418.9	444.2	468.0	491.8	515.6	534.7
62.5°	291.9	299.9	317.3	337.9	364.9	391.9	418.9	442.6	468.0	490.2	510.9
65°	261.8	269.7	287.2	309.4	337.9	366.5	393.5	418.9	444.2	466.4	488.7
67.5°	231.6	239.6	258.6	282.4	311.0	339.5	366.5	393.5	418.9	441.1	461.7
70°	196.7	209.4	228.5	253.8	284.0	312.6	341.1	366.5	391.9	417.3	437.9
72.5°	168.2	179.3	199.9	226.9	255.4	285.6	314.1	341.1	366.5	390.3	410.9
75°	134.9	147.5	169.8	198.3	228.5	258.6	287.2	314.1	339.5	363.3	385.5
77.5°	106.3	119.0	142.8	171.3	201.5	231.6	261.8	288.8	314.1	337.9	358.6
80°	79.3	92.0	117.4	146.0	177.7	207.8	236.4	263.4	288.8	312.6	333.2
82.5°	53.9	66.6	93.6	122.2	152.3	182.5	211.0	238.0	263.4	287.2	309.4
85°	30.1	46.0	71.4	100.0	130.1	160.2	188.8	217.4	241.2	265.0	287.2
87.5°	12.7	30.1	53.9	80.9	111.1	141.2	169.8	195.1	222.1	244.3	265.0
90°	0.0	15.9	38.1	65.0	95.2	123.8	152.3	177.7	203.1	225.3	245.9
92.5°	0.0	9.5	30.1	55.5	84.1	112.6	139.6	166.6	190.4	212.6	233.2
95°	0.0	4.8	22.2	47.6	73.0	100.0	126.9	152.3	176.1	198.3	217.4
97.5°	0.0	1.6	17.5	38.1	63.5	90.4	115.8	141.2	163.4	184.0	203.1
100°	0.0	0.0	12.7	31.7	55.5	79.3	104.7	128.5	150.7	169.8	188.8
102.5°	0.0	0.0	6.3	25.4	47.6	69.8	93.6	115.8	138.0	157.1	176.1
105°	0.0	0.0	3.2	19.0	39.7	61.9	84.1	104.7	125.3	144.4	163.4
107.5°	0.0	0.0	0.0	12.7	31.7	52.4	74.6	95.2	115.8	133.3	149.1
110°	0.0	0.0	0.0	7.9	25.4	44.4	65.0	84.1	103.1	120.6	138.0



TEST NUMBER: P231602

CATALOG NUMBER: S121-DR-2-40-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	3.2	19.0	36.5	55.5	74.6	92.0	109.5	125.3
115°	0.0	0.0	0.0	0.0	12.7	28.6	47.6	65.0	82.5	98.4	114.2
117.5°	0.0	0.0	0.0	0.0	6.3	22.2	38.1	55.5	71.4	87.3	101.5
120°	0.0	0.0	0.0	0.0	1.6	15.9	30.1	47.6	61.9	77.7	90.4
122.5°	0.0	0.0	0.0	0.0	0.0	7.9	22.2	38.1	52.4	66.6	79.3
125°	0.0	0.0	0.0	0.0	0.0	3.2	15.9	28.6	42.8	55.5	69.8
127.5°	0.0	0.0	0.0	0.0	0.0	0.0	7.9	20.6	33.3	46.0	58.7
130°	0.0	0.0	0.0	0.0	0.0	0.0	3.2	12.7	25.4	36.5	47.6
132.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.3	15.9	27.0	36.5
135°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6	7.9	17.5	27.0
137.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6	9.5	17.5
140°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.2	9.5
142.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6
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: P231602

CATALOG NUMBER: S121-DR-2-40-X-0048-1-U-DD-4-W

CANDELA DISTRIBUTION (continued):

	55°	60°	65°	70°	75°	80°	85°	90°
0°	828.2	828.2	828.2	828.2	828.2	828.2	828.2	828.2
2.5°	825.0	826.6	828.2	826.6	826.6	828.2	826.6	825.0
5°	821.8	823.4	825.0	825.0	826.6	826.6	825.0	823.4
7.5°	821.8	825.0	826.6	828.2	828.2	829.8	828.2	826.6
10°	821.8	823.4	826.6	828.2	828.2	829.8	828.2	826.6
12.5°	818.7	821.8	825.0	825.0	826.6	828.2	826.6	825.0
15°	812.3	815.5	820.2	821.8	823.4	823.4	821.8	821.8
17.5°	806.0	809.1	813.9	815.5	817.1	818.7	817.1	817.1
20°	796.4	801.2	806.0	809.1	810.7	812.3	812.3	810.7
22.5°	786.9	793.3	798.0	799.6	802.8	806.0	804.4	804.4
25°	775.8	782.2	788.5	791.7	794.9	798.0	796.4	796.4
27.5°	764.7	771.1	777.4	782.2	786.9	788.5	788.5	788.5
30°	750.4	760.0	766.3	771.1	775.8	779.0	779.0	779.0
32.5°	737.7	747.3	755.2	760.0	766.3	769.5	771.1	771.1
35°	725.1	734.6	744.1	750.4	756.8	761.5	761.5	763.1
37.5°	710.8	723.5	733.0	740.9	747.3	752.0	753.6	752.0
40°	698.1	710.8	720.3	729.8	736.2	740.9	742.5	742.5
42.5°	682.2	696.5	707.6	717.1	725.1	729.8	731.4	731.4
45°	667.9	682.2	694.9	704.4	710.8	715.5	718.7	718.7
47.5°	652.1	666.4	677.5	688.6	696.5	701.3	702.8	704.4
50°	634.6	648.9	660.0	672.7	680.6	685.4	687.0	688.6
52.5°	615.6	629.9	644.1	655.2	663.2	669.5	671.1	671.1
55°	596.5	610.8	625.1	636.2	645.7	650.5	653.7	655.2
57.5°	574.3	590.2	604.5	617.2	625.1	631.4	634.6	634.6
60°	553.7	569.6	583.9	596.5	604.5	610.8	612.4	615.6
62.5°	529.9	545.8	561.6	572.7	580.7	587.0	590.2	591.8
65°	506.1	523.6	539.4	548.9	556.9	564.8	568.0	569.6
67.5°	480.7	498.2	512.5	525.1	531.5	539.4	542.6	542.6
70°	456.9	474.4	487.1	498.2	507.7	514.0	517.2	518.8
72.5°	431.5	447.4	461.7	472.8	480.7	487.1	491.8	491.8
75°	403.0	420.4	434.7	445.8	455.3	461.7	464.9	464.9
77.5°	379.2	395.1	407.7	420.4	430.0	436.3	439.5	441.1
80°	352.2	368.1	382.4	393.5	403.0	409.3	412.5	414.1
82.5°	328.4	344.3	357.0	369.7	377.6	383.9	387.1	388.7
85°	304.6	320.5	334.8	344.3	353.8	358.6	363.3	363.3
87.5°	284.0	298.3	312.6	322.1	331.6	337.9	341.1	341.1
90°	263.4	279.2	291.9	304.6	312.6	318.9	320.5	322.1
92.5°	249.1	265.0	277.6	288.8	296.7	301.4	306.2	306.2
95°	234.8	249.1	263.4	272.9	280.8	287.2	290.3	291.9
97.5°	220.5	234.8	247.5	257.0	265.0	271.3	272.9	274.5
100°	206.3	220.5	231.6	241.2	249.1	253.8	258.6	258.6
102.5°	192.0	206.3	217.4	226.9	234.8	239.6	242.7	242.7
105°	177.7	192.0	203.1	212.6	218.9	225.3	226.9	226.9
107.5°	165.0	179.3	190.4	198.3	204.7	211.0	214.2	214.2
110°	152.3	165.0	176.1	184.0	192.0	196.7	199.9	199.9



TEST NUMBER: P231602

CATALOG NUMBER: S121-DR-2-40-X-0048-1-U-DD-4-W

CANDELA DISTRIBUTION (continued):

	55°	60°	65°	70°	75°	80°	85°	90°
112.5°	139.6	152.3	163.4	171.3	177.7	182.5	185.6	185.6
115°	126.9	139.6	149.1	158.7	165.0	169.8	171.3	171.3
117.5°	115.8	126.9	136.4	144.4	150.7	155.5	158.7	158.7
120°	103.1	114.2	123.8	131.7	138.0	141.2	144.4	144.4
122.5°	92.0	101.5	111.1	119.0	123.8	128.5	131.7	130.1
125°	80.9	90.4	98.4	106.3	111.1	115.8	117.4	117.4
127.5°	68.2	77.7	87.3	93.6	98.4	103.1	104.7	104.7
130°	57.1	66.6	74.6	80.9	85.7	88.8	92.0	92.0
132.5°	47.6	55.5	63.5	68.2	73.0	76.2	79.3	79.3
135°	36.5	44.4	50.8	57.1	61.9	65.0	66.6	68.2
137.5°	25.4	33.3	39.7	46.0	49.2	52.4	53.9	53.9
140°	15.9	22.2	28.6	33.3	36.5	39.7	41.3	42.8
142.5°	6.3	12.7	17.5	22.2	25.4	27.0	28.6	28.6
145°	0.0	3.2	7.9	11.1	14.3	17.5	17.5	19.0
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)