

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: FAIL-SAFE

Report Number:

Luminaire Tested: **FHL-3L-56**

Issue Date: 3/3/2020



Test Information

Test Method: LM-79-08
Report Number:
Test Lab: Crouse-Hinds
Issue Date: 3/3/2020
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: FAIL-SAFE
Catalog Number: FHL-3L-56
Description: LED AREA LIGHT

Light Source: LED

NA. LUMINAIRE OUTPUT = 3350 LMS

Ballast/Driver: -

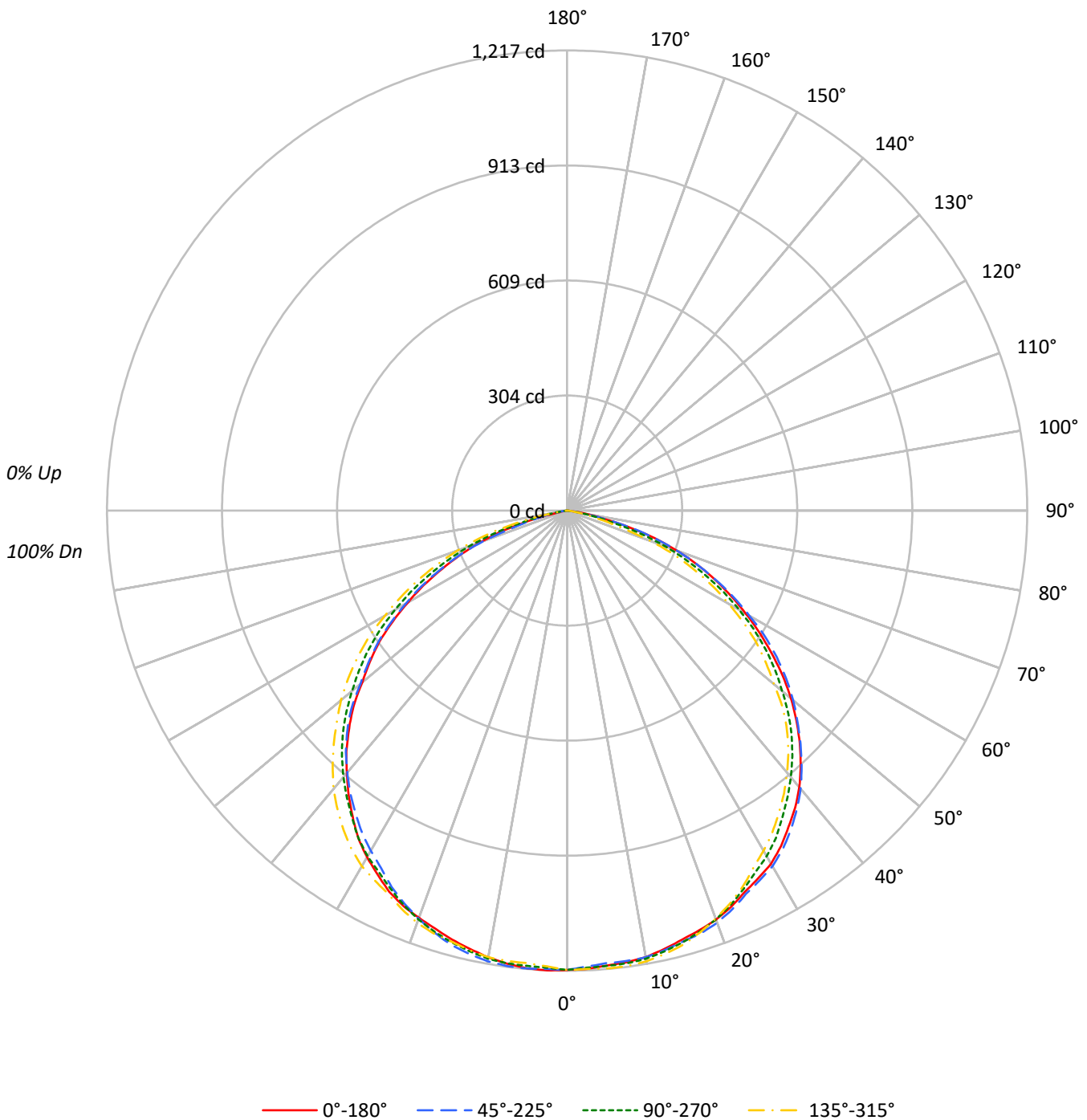
Summary

Lumens per Lamp: 3350 (1 lamp)
Luminaire Lumens: 3354.3 lumens
Efficiency: 100.1%
Efficacy: 69.0 lumens/watt
Spacing Criteria (0/90/45): 1.3 / 1.29 / 1.41
Luminous Opening: Rectangular (W 0.58' x L: 0.58' x H: 0')
CIE Type: Direct

Input Watts (W): 48.6
Input Voltage (V): NR
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:
CATALOG NUMBER: FHL-3L-56

Luminous Intensity Polar Plot





TEST NUMBER:

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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	50	30	10	50	30	10	0		
RCR																										
0	119	119	119	119	116	116	116	116	111	111	111	107	107	107	102	102	102	100					100			
1	110	106	102	98	107	103	100	97	99	96	94	95	93	91	92	90	88					86				
2	100	93	86	81	98	91	85	80	87	82	78	84	80	76	81	78	75					73				
3	92	82	74	68	89	80	73	67	77	71	66	74	69	65	72	67	64					61				
4	84	72	64	57	82	71	63	57	69	62	56	66	60	55	64	59	55					53				
5	77	65	56	49	75	64	55	49	62	54	49	60	53	48	58	52	48					46				
6	71	58	49	43	69	57	49	43	56	48	43	54	47	42	52	46	42					40				
7	66	53	44	38	64	52	44	38	50	43	38	49	42	37	48	42	37					35				
8	62	48	40	34	60	47	39	34	46	39	34	45	38	33	44	38	33					31				
9	57	44	36	31	56	44	36	30	42	35	30	41	35	30	40	34	30					28				
10	54	41	33	28	53	40	33	28	39	32	27	38	32	27	37	31	27					25				

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°	270°
0°	38874	38874	38874	38874
5°	38791	38823	39032	38823
10°	38953	39096	38983	39096
15°	38907	39148	38917	39148
20°	39203	39179	39026	39179
25°	39273	38984	39288	38984
30°	39848	38998	39109	38998
35°	39886	38737	38636	38737
40°	39902	38445	37852	38445
45°	39359	37979	36916	37979
50°	38499	36956	35229	36956
55°	36908	35792	33873	35792
60°	34935	33648	31127	33648
65°	32640	30474	27627	30474
70°	28805	25793	22687	25793
75°	21029	16121	12697	16121
80°	10116	6560	1622	6560
85°	844	184	0	184



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ZONAL LUMENS:

CANDELA DISTRIBUTION:

Zone	Lumens	% Fixture	% Lamp		0°	90°	180°	270°	360°	Flux
0°-10°	115.4	3.4	3.4	0°	1215	1215	1215	1215	1215	
10°-20°	333.3	9.9	10.0	5°	1208	1209	1215	1209	1208	115
20°-30°	511.3	15.2	15.3	15°	1174	1182	1175	1182	1174	332
30°-40°	625.5	18.6	18.7	25°	1112	1104	1113	1104	1112	515
40°-50°	649.5	19.4	19.4	35°	1021	992	989	992	1021	639
50°-60°	570.6	17.0	17.0	45°	870	839	816	839	870	670
60°-70°	395.8	11.8	11.8	55°	662	642	607	642	662	591
70°-80°	146.2	4.4	4.4	65°	431	402	365	402	431	425
80°-90°	6.7	0.2	0.2	75°	170	130	103	130	170	181
90°-100°	0.0	0.0	0.0	85°	2	0	0	0	2	15
100°-110°	0.0	0.0	0.0	90°	0	0	0	0	0	0
110°-120°	0.0	0.0	0.0	95°	0	0	0	0	0	0
120°-130°	0.0	0.0	0.0	105°	0	0	0	0	0	0
130°-140°	0.0	0.0	0.0	115°	0	0	0	0	0	0
140°-150°	0.0	0.0	0.0	125°	0	0	0	0	0	0
150°-160°	0.0	0.0	0.0	135°	0	0	0	0	0	0
160°-170°	0.0	0.0	0.0	145°	0	0	0	0	0	0
170°-180°	0.0	0.0	0.0	155°	0	0	0	0	0	0
0°-30°	960.0	28.6	28.7	165°	0	0	0	0	0	0
0°-40°	1585.5	47.3	47.3	175°	0	0	0	0	0	0
0°-60°	2805.6	83.6	83.7	180°	0	0	0	0	0	0
0°-90°	3354.3	100.0	100.1							
90°-120°	0.0	0.0	0.0							
90°-150°	0.0	0.0	0.0							
90°-180°	0.0	0.0	0.0							
0°-180°	3354.3	100.0	100.1							



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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
0°	1214.9	1214.9	1214.9	1214.9	1214.9	1214.9	1214.9	1214.9	1214.9	1214.9	1214.9
2.5°	1213.1	1213.8	1206.8	1218.0	1210.2	1218.3	1213.1	1216.9	1217.3	1216.9	1213.1
5°	1207.7	1209.1	1201.5	1212.8	1208.7	1215.8	1215.7	1214.5	1215.2	1214.5	1215.7
7.5°	1204.8	1207.9	1201.6	1210.4	1207.8	1208.8	1214.9	1208.5	1208.9	1208.5	1214.9
10°	1198.9	1202.9	1199.4	1205.6	1203.3	1198.2	1210.1	1199.2	1199.8	1199.2	1210.1
12.5°	1187.7	1192.1	1190.8	1195.1	1193.5	1185.5	1200.9	1187.6	1187.3	1187.6	1200.9
15°	1174.5	1178.4	1180.2	1183.1	1181.8	1172.8	1188.4	1177.0	1174.8	1177.0	1188.4
17.5°	1163.6	1168.1	1172.7	1172.6	1167.5	1155.8	1169.6	1163.4	1159.3	1163.4	1169.6
20°	1151.3	1153.7	1159.9	1157.1	1150.6	1139.0	1148.4	1149.7	1146.1	1149.7	1148.4
22.5°	1134.1	1132.1	1141.5	1136.4	1129.3	1122.0	1125.1	1134.8	1132.2	1134.8	1125.1
25°	1112.4	1105.0	1119.0	1110.6	1104.2	1099.8	1098.2	1113.6	1112.8	1113.6	1098.2
27.5°	1095.8	1085.1	1102.6	1091.9	1078.4	1070.5	1065.9	1084.7	1085.5	1084.7	1065.9
30°	1078.5	1065.5	1086.1	1074.3	1055.5	1044.3	1038.6	1056.2	1058.5	1056.2	1038.6
32.5°	1052.4	1037.6	1061.5	1050.6	1027.5	1015.3	1009.9	1023.2	1028.1	1023.2	1009.9
35°	1021.1	1007.8	1031.0	1022.3	991.7	980.3	975.8	983.0	989.1	983.0	975.8
37.5°	990.5	977.2	997.3	990.7	956.7	946.6	942.2	942.5	949.3	942.5	942.2
40°	955.3	946.9	960.9	954.0	920.4	908.2	904.8	900.9	906.2	900.9	904.8
42.5°	914.6	910.4	917.9	910.5	881.7	868.9	866.5	860.8	864.2	860.8	866.5
45°	869.8	870.8	872.8	865.0	839.3	822.9	822.5	815.0	815.8	815.0	822.5
47.5°	822.6	826.9	826.3	817.8	793.3	771.4	774.0	766.4	766.6	766.4	774.0
50°	773.4	782.5	780.6	771.5	742.4	711.9	713.9	708.0	707.7	708.0	713.9
52.5°	718.8	731.2	730.3	720.7	693.5	662.9	663.1	657.8	658.2	657.8	663.1
55°	661.6	676.8	677.0	667.8	641.6	614.1	611.9	605.5	607.2	605.5	611.9
57.5°	604.6	619.8	621.2	613.0	586.0	558.2	554.2	545.9	547.6	545.9	554.2
60°	545.9	559.0	557.0	552.9	525.8	497.5	494.1	484.5	486.4	484.5	494.1
62.5°	488.2	496.0	496.9	489.6	465.8	438.2	435.7	426.3	428.2	426.3	435.7
65°	431.1	435.2	434.1	427.6	402.5	373.8	371.7	364.3	364.9	364.3	371.7
67.5°	371.1	372.9	370.9	364.7	340.4	310.8	308.8	304.8	304.5	304.8	308.8
70°	307.9	309.9	308.0	302.2	275.7	236.6	234.7	240.1	242.5	240.1	234.7
72.5°	242.4	245.2	243.5	239.4	205.4	149.3	146.8	166.2	177.2	166.2	146.8
75°	170.1	171.3	172.3	175.7	130.4	92.3	88.7	86.0	102.7	86.0	88.7
77.5°	95.7	93.8	95.0	98.3	73.3	60.2	55.8	41.9	26.1	41.9	55.8
80°	54.9	49.8	35.2	28.0	35.6	31.8	23.9	9.5	8.8	9.5	23.9
82.5°	25.1	14.1	9.9	10.8	9.0	3.4	2.5	1.6	2.5	1.6	2.5
85°	2.3	3.1	2.8	1.5	0.5	0.0	0.0	0.0	0.0	0.0	0.0
87.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
90°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
92.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
95°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
97.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
100°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
102.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
105°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
107.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
110°	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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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°	202.5°	225°
112.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
115°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
117.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
120°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
122.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
125°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
127.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
130°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
132.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
135°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
137.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
140°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
142.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
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



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CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
0°	1214.9	1214.9	1214.9	1214.9	1214.9	1214.9
2.5°	1218.3	1210.2	1218.0	1206.8	1213.8	1213.1
5°	1215.8	1208.7	1212.8	1201.5	1209.1	1207.7
7.5°	1208.8	1207.8	1210.4	1201.6	1207.9	1204.8
10°	1198.2	1203.3	1205.6	1199.4	1202.9	1198.9
12.5°	1185.5	1193.5	1195.1	1190.8	1192.1	1187.7
15°	1172.8	1181.8	1183.1	1180.2	1178.4	1174.5
17.5°	1155.8	1167.5	1172.6	1172.7	1168.1	1163.6
20°	1139.0	1150.6	1157.1	1159.9	1153.7	1151.3
22.5°	1122.0	1129.3	1136.4	1141.5	1132.1	1134.1
25°	1099.8	1104.2	1110.6	1119.0	1105.0	1112.4
27.5°	1070.5	1078.4	1091.9	1102.6	1085.1	1095.8
30°	1044.3	1055.5	1074.3	1086.1	1065.5	1078.5
32.5°	1015.3	1027.5	1050.6	1061.5	1037.6	1052.4
35°	980.3	991.7	1022.3	1031.0	1007.8	1021.1
37.5°	946.6	956.7	990.7	997.3	977.2	990.5
40°	908.2	920.4	954.0	960.9	946.9	955.3
42.5°	868.9	881.7	910.5	917.9	910.4	914.6
45°	822.9	839.3	865.0	872.8	870.8	869.8
47.5°	771.4	793.3	817.8	826.3	826.9	822.6
50°	711.9	742.4	771.5	780.6	782.5	773.4
52.5°	662.9	693.5	720.7	730.3	731.2	718.8
55°	614.1	641.6	667.8	677.0	676.8	661.6
57.5°	558.2	586.0	613.0	621.2	619.8	604.6
60°	497.5	525.8	552.9	557.0	559.0	545.9
62.5°	438.2	465.8	489.6	496.9	496.0	488.2
65°	373.8	402.5	427.6	434.1	435.2	431.1
67.5°	310.8	340.4	364.7	370.9	372.9	371.1
70°	236.6	275.7	302.2	308.0	309.9	307.9
72.5°	149.3	205.4	239.4	243.5	245.2	242.4
75°	92.3	130.4	175.7	172.3	171.3	170.1
77.5°	60.2	73.3	98.3	95.0	93.8	95.7
80°	31.8	35.6	28.0	35.2	49.8	54.9
82.5°	3.4	9.0	10.8	9.9	14.1	25.1
85°	0.0	0.5	1.5	2.8	3.1	2.3
87.5°	0.0	0.0	0.0	0.0	0.0	0.0
90°	0.0	0.0	0.0	0.0	0.0	0.0
92.5°	0.0	0.0	0.0	0.0	0.0	0.0
95°	0.0	0.0	0.0	0.0	0.0	0.0
97.5°	0.0	0.0	0.0	0.0	0.0	0.0
100°	0.0	0.0	0.0	0.0	0.0	0.0
102.5°	0.0	0.0	0.0	0.0	0.0	0.0
105°	0.0	0.0	0.0	0.0	0.0	0.0
107.5°	0.0	0.0	0.0	0.0	0.0	0.0
110°	0.0	0.0	0.0	0.0	0.0	0.0



TEST NUMBER:

CATALOG NUMBER: FHL-3L-56

CANDELA DISTRIBUTION (continued):

	247.5°	270°	292.5°	315°	337.5°	360°
112.5°	0.0	0.0	0.0	0.0	0.0	0.0
115°	0.0	0.0	0.0	0.0	0.0	0.0
117.5°	0.0	0.0	0.0	0.0	0.0	0.0
120°	0.0	0.0	0.0	0.0	0.0	0.0
122.5°	0.0	0.0	0.0	0.0	0.0	0.0
125°	0.0	0.0	0.0	0.0	0.0	0.0
127.5°	0.0	0.0	0.0	0.0	0.0	0.0
130°	0.0	0.0	0.0	0.0	0.0	0.0
132.5°	0.0	0.0	0.0	0.0	0.0	0.0
135°	0.0	0.0	0.0	0.0	0.0	0.0
137.5°	0.0	0.0	0.0	0.0	0.0	0.0
140°	0.0	0.0	0.0	0.0	0.0	0.0
142.5°	0.0	0.0	0.0	0.0	0.0	0.0
145°	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
150°	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
155°	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
160°	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
165°	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
170°	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
175°	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
180°	0.0	0.0	0.0	0.0	0.0	0.0

(END OF REPORT)